

**REPORT ON
STANDARDS OF UNIVERSITY EDUCATION**

**UNIVERSITY GRANTS COMMISSION
NEW DELHI**

1965

Errata

<i>Page</i>	<i>Para/Line</i>	<i>For</i>	<i>Read</i>
14	2/ (6)	and	to
19	4/ (6,7)	revea-ed	revealed
26	3/ (23)	membership, of	membership of
37	3/ (9)	of—providing	of providing
41	2/ (5)	universities, are	universities are
53	1/ (3)	Western	western
54	2/ (7)	research development	research and development
56	3/ (3)	sector represented.	sector.
57	1/ (19)	such, as	such as
60	1/ (13)	memory,	memory.
63	3/ (2)	but	and
64	2/ (6)	Lecturer	lecturer
66	3/ (11)	management,.	management.
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120	2/ (1,2)	antono-nous	autonomous
164	2/ (2)	benefitted	benefited
245	—/ (10)	141.5	100.0

CONTENTS

	<i>Page</i>
PREFACE	v
Chapter I AIMS OF UNIVERSITY EDUCATION IN INDIA	1
Chapter II EVALUATION OF STANDARDS	8
Chapter III ADMISSION POLICY	15
Chapter IV COURSES OF STUDY	25
Chapter V UNDERGRADUATE EDUCATION	29
Chapter VI POSTGRADUATE STUDIES AND RESEARCH	39
Chapter VII SCIENCE EDUCATION	48
Chapter VIII IMPROVEMENT OF TEACHING	58
Chapter IX MEDIUM OF INSTRUCTION	69
Chapter X EXAMINATION REFORM	76
Chapter XI COLLEGES	83
Chapter XII ORGANISATION OF UNIVERSITIES	92
Chapter XIII MAINTENANCE AND COORDINATION OF STANDARDS	98
SUMMARY AND MAIN RECOMMEND- ATIONS	107
Appendix 1. Questionnaire (Part I) issued to the vice- chancellors	123
Appendix 2. Questionnaire (Part II) issued to the registrars and principals of colleges	124
Appendix 3. Facultywise enrolment from 1916-17 to 1963-64	136
Appendix 4. Admission qualifications, age and ceilings for admission	137
Appendix 5. Composition of boards of studies and procedure for revision of syllabuses	153
Appendix 6. Universities which have introduced the three- year degree course	162

Appendix 7.	Assessment of improvement through the introduction of the three-year degree course	164
Appendix 8.	Grants paid during 1963-64 for the implementation of the three-year degree course scheme in the universities and affiliated colleges	169
Appendix 9.	Duration of the school courses—Statewise	170
Appendix 10.	Summary of the recommendations of the Review Committee on English on the teaching of English in the P.U.C./first year of the university course	171
Appendix 11.	Admission qualifications for research courses	172
Appendix 12.	Standards of research	177
Appendix 13.	Agencies for admission to research courses	181
Appendix 14.	Teacher-pupil ratio	183
Appendix 15.	Qualifications for appointment to teaching posts	186
Appendix 16.	Salary scales of teachers	201
Appendix 17.	Methods of teaching (other than lecturing)	210
Appendix 18.	Workload of teachers	215
Appendix 19.	Composition of selection committees	220
Appendix 20.	Number of books issued to students and teachers	228
Appendix 21.	Medium of instruction and examinations	230
Appendix 22.	Medium of instruction and examinations	234
Appendix 23.	Universities with provision for tutorials	241
Appendix 24.	Residential facilities for teachers	244
Appendix 25.	Objectives of teaching (chemistry & political science)	246
Appendix 26.	Conditions of affiliation (laid down by Andhra, Delhi & Madras Universities)	247
Appendix 27.	Internal assessment at the Indian Institute of Science, Bangalore	252
Appendix 28.	Number of postgraduate colleges universitywise	253
Appendix 29.	Combined percentage of I & II divisions in the B.A./B.Sc. examinations—1946 & 1961	254
Appendix 30.	Combined failure rate at certain examinations	255
Appendix 31.	Analysis of examination results of the Delhi University	257
Appendix 32.	Analysis of replies from vice-chancellors on educational goals	258
Appendix 33.	Minimum requirements of affiliated colleges	262
Appendix 34.	Summary of the report on the pattern of graduate employment	280
Appendix 35.	Number of teachers who left permanent university jobs during the last 5 years	283
Appendix 36.	Number of students entering higher education in selected countries (1958-59)	284
	Acknowledgments	

PREFACE

One of the important functions of the University Grants Commission is to take, in consultation with the universities or other bodies concerned, all such steps, as it may think fit, for the promotion and co-ordination of university education and for the determination and maintenance of standards of teaching, examination and research in universities.

In order to undertake a systematic and objective investigation of problems relating to the standards of higher education in Indian universities, the University Grants Commission appointed a committee in August 1961, consisting of the following :

1. Professor N.K. Sidhanta,
Vice-Chancellor,
Delhi University.
(Since deceased) — *Chairman*
2. Shri S. Govindarajulu,
Vice-Chancellor,
Sri Venkateswara University.
3. Dr. A.C. Joshi,
Vice-Chancellor,
Panjab University.
4. Shri G.D. Parikh,
Rector,
Bombay University.
5. Shri G.C. Bannerjee,
Professor of English.
Bombay University,
6. Shri R.M. Roy,
Principal,
Surendranath College,
Calcutta University.
7. Dr. R.C. Majumdar,
Professor of Physics,
Delhi University.
8. Dr. George Kuriyan,
Director,
Delhi School of Economics,
Delhi University.

9. Professor A.B. Lal,
Professor of Political Science,
Allahabad University.
10. Shri T.K.N. Menon,
Principal,
Central Institute of Education,
Delhi.
11. Dr. G.L. Datta,
Vice-Chancellor,
Vikram University.
12. Dr. P.J. Philip, *Member—Secretary*
Joint Secretary,
University Grants Commission.

The following letter written by Dr. D.S. Kothari, Chairman, University Grants Commission, dated 3rd August, 1961 to the members of the Committee briefly sums up the different aspects of the problem which the Committee was invited to consider :

“Criticism, sometimes informed and sometimes uninformed, is often made of our standards of education. It is often said that during the last few years university standards in teaching and research have generally been going down noticeably, largely as a consequence of the rapid increase in the number of students without a corresponding expansion in the number of teachers and laboratory and other facilities. As against this, we have to recognise that in a number of subjects in some of our universities the present standards of teaching and research compare favourably with the best in the advanced countries. It is apparent that the question of evaluation of standards of teaching and research has many aspects and is a very complex subject. It has been considered desirable that an objective assessment of the position should be made and measures adopted for raising standards wherever they have deteriorated.”

The Committee, under the chairmanship of Dr. Sidhanta, held two meetings in New Delhi, the first on 21st September, 1961 and the second on 16th October, 1961. Dr. Kothari inaugurated the first meeting of the Committee and Dr. Sidhanta explained the nature of the task entrusted to the Committee. This was followed by a general discussion of the salient issues to be considered by the Committee. The second meeting was mainly devoted to the framing of a questionnaire to be sent to the universities for collecting relevant information.

Unfortunately, Dr. Sidhanta passed away in December, 1961 and the work of the Committee was held up until the appointment of a new Chairman. Shri Govindarajulu was appointed Chairman of the Committee in March, 1962. Dr. A.K. Das Gupta, Professor of International Economics, Indian School of International Studies, was appointed as a member of the Committee in place of Shri Govindarajulu.

The reconstituted Committee held its first meeting on 27th and 28th August, 1962 at New Delhi. At this meeting there was a general discussion on the question of standards and also of some of the problems which were referred to the Committee by the University Grants Commission. The Committee considered it desirable to issue two questionnaires, one to the vice-chancellors asking for their views on educational matters and the other to the registrars and the principals of colleges for eliciting information.

Dr. H.J. Taylor, Vice-Chancellor, Gauhati University and Shri T.M. Advani, Vice-Chancellor, Jammu & Kashmir University, were added as members of the Committee in April, 1963. The next meeting of the Committee was held on 22nd and 23rd October, 1963. There was an expression of opinion by each member of the Committee on specific questions. Dr. Kothari also took part in the deliberations. The Committee considered some of the opinions conveyed by the vice-chancellors in response to its questionnaire. It was felt that first-hand discussions with vice-chancellors, heads of university departments, principals of affiliated colleges and representative groups of students would be desirable. The Committee therefore decided to constitute sub-committees for visiting selected centres in the country as under :

<i>Name of the University</i>	<i>Date of visit</i>	<i>Sub-Committee</i>
Banaras	22nd Nov. 1963	1. Shri S. Govindarajulu
Allahabad	23rd Nov. 1963	2. Prof. G.C. Bannerjee
Lucknow	24th Nov. 1963	3. Dr. George Kuriyan
		4. Shri R.M. Roy
		5. Dr. P.J. Philip
Calcutta	2nd Dec. 1963	1. Shri S. Govindarajulu
Gauhati	3rd/4th Dec. 1963	2. Shri G.D. Parikh
Jadavpur	5th Dec. 1963	3. Dr. P.J. Philip
Gujarat	10th Dec. 1963	1. Shri S. Govindarajulu
Poona	11th Dec. 1963	2. Dr. H.J. Taylor
Bombay	12th Dec. 1963	3. Dr. G.L. Datta
S.N.D.T. Women's	13th Dec. 1963	4. Prof. A.B. Lal
		5. Shri R.M. Roy
		6. Dr. P.J. Philip
Osmania	6th Feb. 1964	1. Shri S. Govindarajulu
Mysore	8th Feb. 1964	2. Dr. George Kuriyan
Madras	10th Feb. 1964	3. Prof. A.B. Lal
Kerala	11/12th Feb. 1964	4. Dr. P.J. Philip

Before finalising its report, the Committee had the benefit of a discussion with Dr. C.D. Deshmukh, Vice-Chancellor, Delhi University, on a number of matters relating to higher education. The Committee finalised its report at a meeting held on 23rd and 24th October, 1964 in New Delhi.

CHAPTER I

AIMS OF UNIVERSITY EDUCATION IN INDIA

Our terms of reference include an examination of various aspects of the problem of improving quality and raising standards in the field of higher education. Though this does not require a detailed consideration of educational philosophy, we have thought it desirable to include in our report a chapter on the aims of university education in India, as it is felt that a statement of this kind would be helpful in dealing with the question of standards.

No doubt, some excellent treatises have been written on the aims of university education particularly by a number of renowned western thinkers, but very little creative thinking has so far gone into the discussion of this subject in India. One notable exception is the report of the University Education Commission, 1948-49, which in its second chapter gives an illuminating analysis of the aims of university education in the context of the historic event of the emergence of a free and democratic India. Since then, however, a number of things have happened which seem to us to call for a re-appraisal of the functions of the Indian university. The 15 years that have passed since the Commission's report was published have witnessed in our country an upsurge of developmental activity. We have implemented three Five Year Plans to raise the living standards of our people by accelerating the rate of economic growth. Many new industries have sprung up and have prepared the ground for further expansion in the industrial sphere. Attention has also been drawn to various national needs, and aspirations have been expressed for better living conditions and amenities for our people. We are, in other words, trying to bring into being in India, as speedily as possible, a modern welfare state the lineaments of which had already been drawn in our constitution. In order to translate many of these ideas into reality, we need large numbers of enlightened, competent and trained personnel. It is also essential to produce men and women with a sense of idealism, social awareness and modern outlook. Such is the context in which we are called upon to formulate the goals of university education. The work of our universities is likely to lack purposiveness and perspective in the absence of such a definition.

We have to ask ourselves whether in a democratic set-up and in the midst of an ever increasing emphasis on planned economic development, it is possible to confine the work of the university to programmes which have come down to us from the past. If, however, higher education is to become more production-oriented and responsive to national needs and ideals, a satisfactory answer has to be found in regard to the place to be given to the

time-honoured values and objectives of university education. There are people who ask, 'Why worry about such questions? Is it not far more important to get on with our day-to-day jobs?' It seems to us that they seldom pause to enquire 'why we should get on with our jobs of teaching, learning and doing research or what kinds of jobs have to be done?' While it is true that the basic activities of a university could be carried on without making these enquiries, for a variety of reasons, it seems desirable to clarify our goals and affirm our convictions in the changing context of the historical development of our nation.*

Jawaharlal Nehru said :—

"A university stands for humanism, for tolerance, for reason, for the adventure of ideas and for the search of truth. It stands for the onward march of the human race towards even higher objectives. If the universities discharge their duty adequately, then it is well with the nation and the people **

But it is often forgotten that a university does not cease to promote and preserve these values even when utilitarian functions are required of it. Unless a university trains its students, irrespective of their courses of study, to think rationally and fearlessly and to appreciate moral and cultural values, it cannot be said that it has succeeded in imparting to them anything which could be considered as a peculiar gift of its own. It has, therefore, to be stressed that while fashions change and new needs have to be met by the provision of more practical courses of study, the ideals to which Jawaharlal Nehru drew attention must be perennially kept in view by every university. In other words, even in university institutions which primarily provide training in professional skills, the inculcation of liberal values has to be given due attention and an important place. A specialist however competent he might be, cannot serve society effectively if he has not also acquired an ability to see life clearly and as a whole. It is sometimes argued that since professional courses are so crowded with *technical curricula, very little room can be found in them for the study of other subjects.* But the practice of many advanced technological institutions in the world, like the M.I.T. and Cal. Tech. in the U.S.A., support the belief that technological courses are enriched by association with the study of human values. Scientific studies become more meaningful when they are considered as an expression of the human spirit and not merely as an explanation of how the physical universe operates.

This aspect has particularly to be stressed in a developing society like ours. Knowledge must have some practical uses and, interpreted in a broad sense, the pursuit of knowledge and the acquisition of skills

* The questionnaire issued by us to the universities included a reference to the educational goals which are worthy of pursuit in a university. Some replies were received, and an analysis of the points brought out in them is given in appendix 32.

** Address at the special convocation, Allahabad University, December 1947.

must go together. The medieval universities combined in a way liberal education with professional training. The liberal elements of higher education gained a greater importance in the 18th and 19th centuries, especially in Great Britain, in response to the need of the country at that time for personnel so educated. The American universities combined the aims of liberal education with a concern for training for different professions and vocations appropriate to a nation passing through a period of transition and development. Even in England with the rapid industrialization of the country and the general acceptance of the ideal of the welfare state, universities realised the necessity to offer facilities for many kinds of professional education. It is significant that the Robbins Report stresses the training of personnel for remunerative and meaningful employment as one of the chief purposes of university education. In the present situation in India, involving attempts to bring about far-reaching economic and social changes, it would be conceded that universities have to lay much greater stress on development-oriented education. But in doing so we have to take care that the personality of the student as a cultured and responsible member of society and as a constructive citizen of the state is not lost sight of.

The transmission of existing knowledge to new generations is of course one of the primary tasks of the university. But education does not subserve its end if it is confined to the communication of bits of information in a mechanical way. If teaching has degenerated in a number of our institutions into routine instruction, the cause of the malady invariably can be traced to a lack of appreciation of the true nature of learning. Many of the defects of the present system of higher education in the country, such as emphasis on mass lectures, reliance on ready-made notes and guide books, memory testing examinations, etc. are the outcome of a mechanical view of the teaching and learning processes. We may well ask as the poet does :—

Where is the wisdom we have lost in knowledge?

Where is the knowledge we have lost in information ?

The cycles of Heaven in twenty centuries,

*Bring us farther from God and nearer to the dust.**

One of the essential conditions to be fulfilled in order to transform teaching from imparting of information to acquisition of knowledge, and learning from mere memorization to training of the mind and sharpening of the intellect, is a consideration of the authentic role of the teacher. The teacher has to be conceived as a person who can stimulate in the students a genuine desire for scholarship by bringing their minds into living contact with his own.

The advancement of the frontiers of knowledge by research is another important activity of the university. Following the publication of Bruce Truscott's *Redbrick Universities*, there has been an unfortunate con-

* Quoted from the Report of the University Education Commission, 1948-49, page 35.

troversy regarding the relative importance of teaching and research in a university. We consider this to be an unnecessary controversy. Conservation of the existing knowledge and the extension of its boundary have to go together. But research should not be interpreted in a narrow sense as being a professional undertaking. Research in the wider sense represents the typical attitude and activity of the university as an institution dedicated to the pursuit of truth and excellence. Unless teachers are imbued with a desire to consider learning imaginatively and are prepared constantly to subject existing knowledge to critical inquiry, it would be impossible to generate the necessary dynamism without which no university can prosper.

The foregoing aims, it will be admitted, are applicable to all universities in the world. What then makes universities in one part of the world different from those in another part? It is surely in the intellectual traditions and particular concerns of a university that we have to look for the differences. Thus there are certain objectives which unite universities in a country which are not identical with those of universities in other countries. They are chiefly a product of that country's history and philosophy and aspirations. They are intimately related to the inner life of each nation and its commitment to the pursuit of specific social and economic goals. The universities in consequence have to take special interest in them.

While our universities encourage the study of many subjects such as the Indian languages, Indian history, Indian philosophy, Indian fine arts, etc., it is doubtful whether they have been able to develop an integrated approach to these studies resulting in a philosophy of higher education which can be considered as a genuine contribution from our country. At any rate, when an astute foreign observer like Sir Eric Ashby comes to the conclusion that no attempts are made in Indian universities to develop a really Indian intellectual tradition, it is time we sat up and took a good look at ourselves.† But how can we develop in our universities an Indian outlook and intellectual tradition so that even though sharing many common aims with universities elsewhere, they will be able to impart to our students something of their very own. An attempt is made in the following paragraphs to indicate how this could be done.

First of all, we should see that every student who passes out of an Indian university takes with him some understanding of India's cultural heritage, its past achievements and triumphs in the field of art, philosophy, science and so on. He should, in other words, know what he is heir to. This could, perhaps, best be done at the first degree stage where such a study could form a part of a programme of liberal education. It is noteworthy, in this connection, that all university students in America have to take a course in western civilization.

† Sir Eric Ashby: *Pattern of Universities in non-European Societies*, published by the School of Oriental and African Studies, University of London.

Secondly, the academic programmes of the universities in India should also have adequate room for specialization and research in certain subjects. While a number of universities have postgraduate and research departments in Indian history, Indian philosophy, Sanskrit etc., these subjects do not at present enjoy sufficient popularity and support, partly owing to lack of appropriate employment opportunities for those who have specialised in them. Prospects have, therefore, to be created by government and other agencies for these students. It is also to be remembered that the value of studies of this kind cannot be estimated entirely in terms of material gains or practical utility. They are to be considered important in view of the direct contributions they make to building up in our universities a genuine love of scholarship in fields in which India had excelled in the past, and therefore could again do so. It is doubtful whether our present facilities are satisfactory in this regard. Instances have come to our notice of scholars coming to our universities from abroad and finding themselves disillusioned by what our universities have to offer them.

Together with study and research in these areas, it is also essential to develop in our universities a critical approach to the values and schools of thought which have come down to us from the past, by subjecting them to critical examination and adaptation. We have to apply to them the same methods of questioning and scrutiny as we do in other branches of knowledge so that they may become meaningful and significant to us in our day and time. Our efforts should not only be confined to understanding the ideas and ideals which influenced the lives and thinking of our forefathers—we have also to create out of them a living intellectual system which would be acceptable to new generations. A real effort has to be made to generate out of our ancient philosophy, a self-sustaining dynamism capable of producing schools of thought commensurate with our modern objectives. In our opinion no agency is more suited to undertake such a difficult but rewarding task of analysis, interpretation and adaptation than the Indian university.

Our universities have also to develop a sensitivity to their surroundings and to inculcate among their students and teachers a real consciousness of the conditions and problems that exist in their neighbourhood. Unless they become fully aware of the circumstances in which people around them live, they may become alienated from social realities and develop attitudes of mind which are not likely to make them useful citizens of India. In this connection, the following commentary on the African situation by Sir Eric Ashby seems pertinent. "For an African the impact of a university education is something inconceivable to a European. It separates him from his family and his village (though he will, with intense feeling and loyalty, return regularly to his home and accept what are often crushing family responsibilities). It obliges him to live in a western way, whether he likes it or not. It stretches his nerve between two spiritual worlds, two systems of ethics, two horizons of thought. In his hands

he holds the terrifying instrument of western civilization: the instrument which created Jefferson's speeches, the philosophy of Marx, the mathematics and chemistry of atomic destruction. His problem is how to apply this instrument to the welfare of his own people. But he has no opportunity to reflect on this problem. For one thing, the gap between himself and his people is very great. the universities and their graduates are isolated from the life of the common people in a way which has had no parallel in England since the middle ages. This is the peculiar dilemma of the African university. Because of this dilemma the social function of the university in Africa cannot, for a generation at least, be comparable with its social function in Britain. And the African graduate, who alone is competent to reflect on the social function of universities in Africa, has no time for this task."*

In India also a wide gulf often separates our students from the life of the common people. If a student who comes out of the university considers that he has little in common with his community, something has certainly gone wrong with his education. We do not, however, mean that the university student should accept the given ethos of his society without criticism or enquiry. Universities in developing countries like India, in fact, have a three-fold function to discharge. Firstly, they have to ensure that they do not appear to be an 'ivory tower' in relation to the rest of the community; they must reflect and respond, in a genuine way, to the life of the people living around them. Secondly, it is mainly through the intellectual and moral leadership of our universities that a tradition-bound and stagnant society is to be transformed into a modern and progressive community. The university is not to be looked upon merely as a centre of learning and research, in the narrow sense, it has also to be seen as an institution dedicated to the pursuit of specific programmes which have a direct bearing on the welfare and edification of society. Thirdly, and most important of all, it should be considered obligatory on the part of the university to make an intensive study of problems that beset its neighbourhood for the purpose of finding practical remedies for them. For example, universities in rural areas have a special responsibility in regard to the study of agricultural and allied problems and universities situated in cities and towns must give a high priority to the investigation of questions concerning urban life.

The above considerations apply with equal aptness to the relation between the university and the nation as a whole. It is expected of every university in India that it will exercise a wholesome influence on the thinking and planning activities of government and other agencies for bringing into being a society based on the secular and ethical principles embodied in our constitution. Universities have also to give an important place to the study of various issues that are involved in the efforts that we make to build up a prosperous, modern, democratic and secular state.

All these would call for a new approach to and appreciation of the role of the university. The time has come for making a radical departure from old ways and methods in this regard. In a country like India where resources are claimed by innumerable needs and uses, universities have to serve many more purposes than are described in text-books or is the case in some affluent or advanced countries. It has not only to be a centre of 'light and learning' but has also to function as an active participant in and dynamic instrument of rapid social change. With this aim in view, universities have to provide for different new kinds and levels of training and research. It will be necessary to extend the scope of the university's service beyond traditional boundaries. A new idea and ideal of service have to inspire and inform its activities.

One of the most pressing problems facing our country is the development of a national outlook over-riding parochial, religious and linguistic considerations. In this task the universities can and should play a decisive part. A national outlook and purpose have to be deliberately cultivated by the pursuit of a policy of seeking national ends rather than local interests. In this sphere much has to be done, as many things have happened in recent years which are likely to cause harm to the unity of our country. It has also to be borne in mind that a regional culture cannot be promoted to the status of a national culture. Universities have to apply their mind to a study of this problem in all its sociological, linguistic and other aspects, and also so organise their own procedures and programmes that they are able to make a constructive contribution to the evolution of a common outlook and sense of unity in the country. The Indian university has, in short, to make an intellectual as well as an emotional approach to a solution of this problem.

Universities in India have also to be internationally minded. If they are to benefit from the vast expansion of knowledge that is taking place in different parts of the world today, their channels of communication and reception have to be kept open. Any tendency on the part of our universities to close their doors or windows has to be discouraged. It should not be forgotten that in the ultimate analysis every university is an international institution, since knowledge knows no boundaries. In the pursuit of truth and excellence to which all universities are committed, there is neither east nor west, north nor south. It is therefore of the utmost importance that nothing should be done in our universities which would impair their relationship with this great society of scholars and scientists; on the contrary, every effort has to be made to make them active participants in the work of the world community of learning.

CHAPTER II

EVALUATION OF STANDARDS

The problem of making an objective assessment of the standards of higher education is as important as it is complex. It is said that during the last few years university standards have generally suffered. It has been pointed out that students of 10 or 15 years ago were of a better calibre and their intellectual attainments were of a higher order. Another allegation is that examination results have not registered any radical improvement—that the proportion of first and second classes to the total number of successful candidates has been going down in many sectors of university education, and that the percentage of passes has also deteriorated. Reference is also made to the findings of such bodies as the Union Public Service Commission, Department of Atomic Energy and so on to support the view that standards have declined in recent times in our universities. It is also contended that well-defined objectives do not inform and inspire the formulation of courses of study at different levels in the universities. A further shortcoming that is attributed to our universities is their inability to develop, in an adequate measure, the potentialities of their students. Finally, it is held that our standards do not compare favourably with international standards. We agree that all these issues are in one way or another germane to an evaluation of university standards in India.

Apart from considering these issues on the basis of available information and other data, we had before us replies received from the universities to two questionnaires, one for obtaining factual details in regard to the existing position of teaching and research and the other for eliciting the personal views of the vice-chancellors regarding university standards. We also divided ourselves into sub-committees, as stated earlier, and visited a number of centres for meeting teachers and students, vice-chancellors, principals of colleges and other educationists in different parts of the country.

In regard to the question whether the educational achievements of our present students are of a lower order than those of the previous years, we have to note that the growth of knowledge in recent times has been so rapid that it is often referred to as an 'explosion'. It is possible to argue that in this context the search for an objective measure loses much of its meaning. The unified curriculum has practically disappeared in different parts of the world and the view of standards increasingly taken everywhere tends to be dynamic. It is not, therefore, possible to apply any constant unit of evaluation to the situation.

The contention relating to examination results is more demonstrable, since we could look at the record of universities in this field during a period

of time in order to find out whether there has been any decline in the standards of scholastic achievement. In analysing the examination results over a number of years, we have however been conscious of two limitations. Firstly, recent investigations have shown that the present methods of marking scripts and evaluating the performance of students are not sufficiently reliable. A study made by Dr. H.J. Taylor, a member of our committee, comes to the conclusion that, "More studies need to be made of the precision of these estimates, but in the meantime, it should be assumed that the standard error of a mark is not less than 7."* Secondly, even if the examination marks are to be treated as accurate, there is so much variance between one university and another, and between one faculty and another in the same university, that to speak of an all-India average does not fully reflect the magnitude of the problem.

The following table gives the various percentages of passes in the years 1949 and 1961 :

Name of the examination	1949	1961
B.A. Pass	50.8	46.1
B.A. Hons.	77.2	60.1
M.A.	78.0	81.7
B.Sc.	44.0	45.2
B.Sc. Hons.	64.7	58.8
M.Sc.	74.4	79.9
B. Com. Pass/Hons.	50.3	46.7
M. Com.	95.8	82.1
B.Sc. Engg.	71.4	72.4
M.Sc. Engg.	—	92.0

It is apparent that examination results vary from one faculty to another. While the pass percentage declined between 1949 and 1961 in B.A. Pass and Hons., B.Sc. Hons., B. Com. Pass/Hons. and M. Com., it improved in the B.Sc., M.A., M.Sc., and B.Sc. (Engineering) examinations. The proportion of first and second class students has shown a similar tendency as would be evident from the following table.

Year	B. A.			B. Sc.			M.A.			M.Sc.		
	I	II	III	I	II	III	I	II	III	I	II	III
1952	1.2	28.8	70.0	6.3	35.0	58.7	5.2	40.9	53.9	23.5	55.8	20.7
1957	0.8	26.4	72.8	7.1	34.8	58.1	4.6	37.2	58.2	22.3	53.9	23.8
1962	1.0	24.2	74.8	8.5	39.6	51.9	3.7	41.3	55.0	24.6	57.2	18.2

* *Three Studies in Examination Technique*, p. 6.

It will be seen that the proportion of first classes has gone down in both the B.A. and M.A. examinations during the decade between 1952 and 1962 but has gone up in the B.Sc. and M.Sc. examinations. The proportion of second classes has improved in the B.Sc. & M.Sc. examinations but has registered a decline in the B.A. examination.*

While these figures do not indicate whether standards have improved or deteriorated, they clearly point towards the qualitative and quantitative superiority of postgraduate results over undergraduate results, and of the results of the Engineering faculty over those of the faculties of Arts, Science and Commerce. This evidently could be related to the comparative strictness with which students are selected for these courses and to the fact that better facilities are provided for postgraduate training. Thus standards of higher education appear to depend to a very large extent on the quality of the students offering various courses, and the conditions in which education is carried on in our universities and colleges.

Standards are said to be unsatisfactory also from the point of view of the expectations entertained by the public including employing agencies like business concerns, government departments etc. Although they do not necessarily look for the same intellectual qualities for which universities prepare their students, it cannot be denied that one of the aims of university education is to give to students training in skills in order to lead them to gainful employment, and also to make them useful members of society. Many business houses, government departments and other organizations have not been enthusiastic about the quality of the average graduate of our universities. The Union Public Service Commission, for example, in its seventh report points out: **“The remarks of the examiners on the performance of candidates in the written examinations of the Commission make depressing reading. As a general rule, candidates do not show any real grasp of their subjects and their answers are mainly based on cramming. This lack of grasp is brought out prominently at the interviews. The combined examination for the Indian Administrative Service and other Central Services produces a number of bright and intelligent young men whose personality and mental qualities are of a high standard and who are quite fit for the service for which they are recruited. But it must be remembered even here that only a few hundred are selected out of over 6,000 candidates who actually take the examination. As for the services where candidates of a younger age group are required, the results have been very disappointing; and in the Services Selection Boards and the

* The data collected concerning examination results in different universities is contained in Appendix 29. It will be seen that the combined percentage of 1st and 2nd classes at the B.A. examination has gone down in the Universities of Agra, Andhra, Banaras, Calcutta, Lucknow, Madras and Panjab while it has gone up in the Universities of Allahabad and Bombay. At the B.Sc. examination the percentage has declined in the Universities of Agra, Andhra, Calcutta and Lucknow while it has risen in the Allahabad, Banaras, Bombay, Madras and Panjab Universities.

** Seventh Report of the Union Public Service Commission, p. 5 & 6, para 13.

physical endurance tests, a distressingly large number of candidates from among those successful at the written examination have to be rejected. This poses a problem for our educationists. The Commission have to point out their experience that the present system of education leaves much to be desired so far as the development of the mind and attitudes of the candidates is concerned. The tone of discipline, the level of academic achievement to be aimed at and the methods of promotion from lower classes to higher classes have all, no doubt, a bearing on the standard of education. But it should be seriously examined whether the present educational system provides adequate facilities and opportunities for the enlargement of the mind and development of the character and personality of our students. So long as the system of education in schools and colleges does not serve this purpose adequately, the personality tests whatever may be their imperfections, will have to play an important role in the selection of candidates for public services." This view is supported by the following table pertaining to the number of candidates qualifying for interview in the I.A.S. examinations.

Year	Number appeared	Number qualified	Percentage
1957	5,216	1,010	19.4
1958	6,297	680	10.8
1959	6,514	750	11.5
1960	4,849	110	12.6
1961	4,680	623	13.3
1962	4,446	434	9.8

The Department of Atomic Energy in one of its reports have stated that the quality of our science students has gone down in recent years. From a number of examinations conducted by them in connection with various training programmes, scholarships etc., it has been found that outmoded syllabuses, lack of sufficient practical training, poor quality of teachers etc. are responsible for this.

It is also significant that a large number of our students do not find jobs commensurate with their formal qualifications. An all-India sample survey of the pattern of graduate employment undertaken in 1960 by the Director General of Employment & Training, to show the relationship between university education and subsequent employment, has revealed that although 86.9% of the graduates were employed, only half of them thought that their present jobs were suited to their education and liking (Appendix 34). While this is partly due to the limited number of sufficiently remunerative posts, it is also indicative of the fact that a significant proportion of the products of our universities are found unsuitable for the jobs requiring a high level of competence and responsibility, and thus

forced to accept positions for which university degrees are not necessary, such as clerical posts etc.

It is generally understood that at the Bachelor's degree stage a student should develop a general ability to take positions of responsibility. He should acquire a trained mind and a scientific outlook, and should acquaint himself with techniques of adding to the knowledge he already possesses. At the postgraduate stage, it will be admitted that the primary objective should be related to specialization in a particular discipline, capable of leading the student either to research work or employment in one of the learned professions. It is doubtful whether our universities fully appreciate requirements in this regard and take serious steps to formulate their courses in accordance with such objectives. The Review Committees of the U.G.C. have found that syllabuses often enumerate a number of topics without any relation to well-defined educational goals.

Another way of approaching the problem of standards is to ascertain whether the intellectual and other potentialities of our students are adequately utilized and developed by our universities and colleges. It is necessary first to identify the potentialities, and then to draw out of the students what is latent in them, and to strengthen their intellectual and *spiritual powers*. In this context we have to say regretfully that the conditions in which teaching and learning are carried on in our universities and colleges are far from congenial. We were told by university teachers and others conversant with the situation, that while efforts are made in some institutions to develop the personality of the students, owing to pressure of increasing enrolment and other difficulties, a number of institutions are unable to pay any attention to this aspect, education being limited to classroom instruction. The enormous expansion of education that we are witnessing in our time, has diluted facilities, such as staff, libraries, laboratories, class-rooms, hostels etc. to such an extent that there does not seem to be any immediate prospect of realizing this aim on a wide scale. The present teacher-pupil ratio of 1:17.3 makes it difficult for teachers to pay individual attention to students.* A large majority of our students come from homes with no educational background and the proportion of students residing in hostels is about 20 per cent of the total. There are 268 colleges with 1000—2000 students and 46 colleges have an enrolment of more than 2000. Suitable extra-curricular activities are also lacking in many of our institutions.

In another sense, and this is of very great importance, standards have to be judged by international comparisons, since university standards cannot be peculiar to a country, the pursuit of knowledge being universal. The achievements of Indian universities have, therefore, to be judged in the light of attainments in similar institutions in other countries. The general opinion among university teachers seems to be that the quality of

* The undergraduate ratio including colleges is much poorer and has been estimated to be in the region of 1 : 30.

the best students has not deteriorated, but that the average student of an Indian university does not compare favourably with his counter-part in the well-known universities of the rest of world. This is indicated by the fact that some of our students find it increasingly difficult to obtain admission to them. The U.G.C. Review Committees too have come to a similar conclusion. Thus the Chemistry Committee expressed the view that "by and large, our standards of teaching and research are not comparable to those in other advanced countries and that our country's attention should be directed to improving the situation."* The Review Committee on Mathematics pointed out that "for more than half a century several Indians have made significant individual contributions to Mathematics. But generally speaking our progress in the subject has unfortunately lagged behind rapid developments in the rest of the world."** The view expressed by Dr. D.C. Pavate, Vice-Chancellor, Karnatak University, deserves mention. "Most professors of mathematics, physics, chemistry and engineering (in Canada) hold the opinion that a majority of our students are 'sub-average'. It is a sad commentary on the standards of education at least in some of our universities."†

While these judgments may not be wholly correct, we feel that they have in them a large measure of truth. No doubt, the unsatisfactory nature of our school education, uncongenial social backgrounds of students, insufficient and ill-qualified teaching staff, inadequacy of libraries and laboratories etc. are chiefly to blame for this situation. We believe, however, that the main handicap from which our students suffer when they go abroad is that instruction in the Indian universities is, by and large, out-dated in several fields. We cannot rest content until our degrees betoken the same depth and development of knowledge and intellectual maturity as elsewhere.

We have also to recognize that there are certain areas where improvements have taken place. It was pointed out by several universities that the best students were as good as ever, if not better, and that the content of courses was generally of a high level. Many also referred to the outstanding work being done by some of the university departments and to the fact that a number of university teachers have been receiving recognition from well-known centres of learning and research in foreign countries. It is equally noteworthy that various schemes of national development have been implemented by personnel trained in our universities.

Again, with the setting up of the University Grants Commission in 1953, it has been possible to give increased assistance to universities and colleges towards their development programmes. In assessing the requirements of various universities, the Commission has, from the very beginning, followed the policy of taking advice from people with an intimate knowledge

* *Chemistry in Indian Universities*, p. 43.

** *Mathematics in Indian Universities*, p. 65.

† Convocation address at the Marathwada University, October, 14 1964, pp. 4-5.

of the problems of higher education. Improvement of libraries and laboratories, institution of scholarships and fellowships, revision of the salary scales of teachers, setting up of centres of advanced study in different academic disciplines, organization of seminars and conferences, etc., are some of the steps which the Commission has taken to reinforce standards in our universities and colleges. While we appreciate these special efforts made by the Commission in strengthening postgraduate teaching and research and also, to some extent, the quality of undergraduate teaching, it is felt that the resources available to the Commission for this purpose have been far from adequate.

The output of research work in our universities and colleges is another useful index for judging how far universities are able to develop in their students the capacity to undertake original and creative work. A report prepared by the University Grants Commission gives for each university the number of theses accepted for the award of the Ph.D. degree during 1950-51 and 1960-61. It shows that the number has gone up from 71 to 248 in the faculty of Arts, from 92 to 370 in the faculty of Science, from 4 to 14 in the faculty of Commerce, from 10 to 30 in the faculty of Engineering and Technology, from 12 to 81 in the faculty of Medicine, from 2 to 32 in the faculty of Agriculture and from nil to 11 in the remaining faculties. For all the years combined the total number of Ph.D. theses accepted during 1950-51 to 1960-61 is 5037. This is an impressive record but it must be noted that not many of the theses have been published so far.

The picture that emerges from the above account is one of lights and shades. It cannot be said that there has been an overall deterioration in standards. Conclusions that can be drawn from the above account cannot also be applied to every class of student and to every stage of instruction. While our universities have many achievements of which they can justly be proud, there is also much cause for dissatisfaction. In the succeeding chapters we shall attempt to deal with some of these problems. We shall discuss them in the context of such questions as admission of students, courses of study, undergraduate education, postgraduate studies and research, science education, teaching techniques, medium of instruction, examination reform, administration and financial requirements of universities etc., which are directly connected with the maintenance and improvement of standards. We shall indicate the areas in which standards have been adversely affected and suggest ways in which remedial action could be taken.

CHAPTER III

ADMISSION POLICY

There has been a rapid growth of university enrolment in recent years. In 1963-64 the total enrolment of students in the universities and colleges excluding students of Intermediate Boards was 11,84,697 which shows an increase of 1,02,031 over the enrolment of 1961-62 which was 10,82,666. The total enrolment has more than doubled over a period of 10 years. On the present basis of increase in numbers it is expected that by the end of the Third Plan i.e. 1965-66, the figure for all the universities would be about 13 lakhs and by the end of the Fourth Plan or 1970-71 a little above 19 lakhs. It is also to be observed that the increase in the enrolment has not been accompanied by commensurate enhancement of physical and other facilities in the universities. It is doubtful whether this position could be improved appreciably in the near future. Judging from past experience, it would appear that our ability to provide additional staff, buildings etc. may not keep pace with the rising numbers in the universities.

In general, the qualification for admission to the three-year degree course is the same in most universities (Appendix 4). The student who seeks admission should have passed either a higher secondary examination or matriculation school final examination followed by a one year pre-university course. Certain examinations such as the Cambridge School Certificate examination also are considered to be equivalent to these examinations. In the State universities of U.P. and in the Bombay University, there is an intermediate examination and a degree course, both of 2 years' duration. A student enters the degree course after passing the intermediate examination. While the academic qualifications required for admission to the degree course are more or less the same in different universities, there are minor variations in actual practice.

It does not mean that all students who possess the minimum qualifications are able to get admission to any university they like. Some universities, e.g. Delhi, Jadavpur, Osmania, Patna and Sri Venkateswara have laid down special conditions for the admission of students to degree courses. The Delhi University requires 45% marks and above at the qualifying examination for admission to the B.Sc. pass course and the honours courses in Arts and Science. The Jadavpur University insists on at least a second class at the pre-university or higher secondary examination plus an interview before admission is granted. The Osmania University admits only those candidates to the pre-university course who have secured at least 35% marks in aggregate in one attempt at the high school examination. The Patna University takes into account the percentage of marks obtained in the higher secondary examination "less the sessional marks

and marks in optional subjects". Sri Venkateswara University insists on a B plus in the subject and a B plus in aggregate for admission to the B.Sc. course.

Some universities have approached the problem of admission from the point of view of the minimum age required to ensure that students who enter the university have a certain degree of maturity. Even in this regard the practice is not uniform. The following 16 universities have prescribed minimum age limit for admission to the pre-university or first year of the degree course† : Andhra, Annamalai (14 years and 6 months for admission to the pre-university course), Baroda (15 years for admission to the preparatory class), Banaras (minimum age 16 plus and maximum 21 years), Calcutta*, Delhi, Gujarat (15 years for admission to the P.U.C.), Jadavpur, Karnatak, Kuruksetra, Madras (15 years and 6 months on the 15th of July for admission to the first year of the degree course), Rajasthan, S.V. Vidyapeeth, Saugar, Sri Venkateswara and Visva-Bharati. In the Universities of Agra, Bhagalpur, Bombay**, Jabalpur, Kalyani, Mysore, Nagpur, Osmania, Panjab, Punjabi, Patna, Poona, Ranchi, Shivaji and Vikram a minimum age has been prescribed only for the faculties of Engineering and Technology or Medicine or Physical Education. There is no age limit in the Gauhati, Gorakhpur, Jammu & Kashmir, Magadh, Marathwada, Rabindra Bharati and S.N.D.T. Women's Universities. In the Jodhpur University the age for admission to the P.U.C. and the first year of the degree course is contemplated to be 15 plus and 16 plus respectively.

The question of limiting the number of students in affiliated colleges or the number in lecture classes/departments has engaged the attention of universities. But the attempts made in this direction have met with only partial success. It is only in a few universities that some kind of ceiling has been fixed. The Bombay University has prescribed a limit of 2500 for Arts and Science colleges and 1250 for Law and Commerce colleges. The Calcutta University has ceilings for admission to colleges according to the physical facilities and the general rule is that a class or section should not have more than 150 students. The Delhi University has laid down the maximum enrolment at 1000 students for its constituent colleges. In the Gujarat University, the ceiling is 1500 for a one unit college. The Panjab University and S.V. Vidyapeeth have accepted the suggestions of the Three-Year Degree Course Estimates Committee that ordinarily the total number of undergraduate students in a college should not exceed 800-1000.***

† The prescribed age limit is 16 for admission to the three-year degree course unless otherwise specified.

* Not yet enforced.

** The question of prescribing the minimum age of 15 plus for admission to the first year course is under active consideration in the Bombay University.

*** Report of the Three-Year Degree Course Estimates Committee of the Ministry of Education published in 1958 page 10.

The Universities of Allahabad, Annamalai, Banaras, Bihar, Bombay, Jadavpur, Jodhpur, Kerala, Madras, Rabindra Bharati and Sri Venkateswara have ceilings in respect of departments/colleges at the undergraduate and postgraduate levels. Some universities like Calcutta, Gorakhpur, Jabalpur, Magadh and Ranchi have prescribed ceilings for postgraduate departments only. The Universities of Karnatak, Kuruksetra, Nagpur, Osmania, Poona, Saugar and Vikram have limited numbers for admission to postgraduate classes in Science subjects only. In the Baroda University, the number to be admitted to the first year B.A. class is laid down but the Science departments determine the number according to available facilities. Universities like Agra, Calcutta, Rajasthan and Shivaji have set down limits to the total number of students for lecture classes. In the Andhra University ceilings are fixed every year commensurate with requirements and facilities.

The above regulations are, however, not always strictly adhered to because of the great pressure for admission and the attempts made by outside agencies, including governments, to influence the universities to depart from approved criteria in this regard. It is only in the better colleges that particular care is taken to admit students with good qualifications. There are various factors which make it difficult for universities and colleges to apply stiff standards to the selection of students. In a country which is passing through a period of national awakening, the right to higher education is widely looked upon as almost a fundamental right. It is also to be noted that to many communities in India higher education appears to be a means of social uplift. Any attempt to deny to them access to university education is bound to meet with strong opposition. While it is possible in a totalitarian society to regulate numbers strictly in accordance with manpower requirements, such an approach seems almost impossible in a democratic set-up. Again, in India the expansion of higher education is supported not only on the basis of popular aspirations, but also on account of the bearing it is expected to have on the economic and social development of the country. For example, it is stated in the chapter on Education in the Third Five Year Plan issued by the Planning Commission :

“Education is the most important single factor in achieving rapid economic development and technological progress and in creating a social order founded on the values of freedom, social justice and equal opportunity It is one of the major aims of the Third Plan to expand and intensify the educational effort so that from now on, in all branches of national life, education becomes the focal point of planned development.”

It is in such a complex context that the increase in the number of those who pass the matriculation examination and seek admission to university courses has to be viewed.

In 1950-51, 2,41,143 students passed the matriculation or equivalent examinations. By 1960-61, this number had increased to 6,53,640. We do not have the figures of the number of applications made for admission to universities courses, but it is estimated that more than half of those who pass the matriculation examination seek opportunities for higher education.* This is largely due to the fact that the number of available alternative courses is limited. Very often inability to secure entrance to a university course means that the student has no other opportunity for further training. It is also not possible at his age to find suitable employment. A committee appointed by the U.G.C. to enquire into the problem of reduction of numbers in the 'big colleges' in the city of Calcutta found "that it was much better that students got some kind of education at the very impressionable age of 17 to 21 rather than being left unemployed or unemployable, roaming in the streets of the city, and creating problems for the state."

There is no doubt that the most relevant question for a consideration of standards in a university is the quality of those admitted. It does not require a great deal of argument to prove the elementary proposition that the higher the qualification for admission, the better would be the quality of the graduate produced by the university. While opportunities for university education should be made available as widely as possible, we must ensure that only those students are admitted to universities who are fitted by their aptitude and ability to profit by it. It may be noted in this connection that the Robbins Committee in U.K. has recommended that only those who possess the necessary aptitude and ability should be allowed to come to the universities.** It is a significant fact that in the Universal Declaration of Human Rights of the United Nations, the right to higher education is referred to as a qualified right or a right which is subject to competence on the part of the student to benefit from such education.***

We are of the view that the selection of students is central in any discussion on educational reform and great stress should be laid on this question. Current practices lead to a great many students, who cannot benefit from higher education entering the universities, as indicated by high failure rates in the examinations. There are also innumerable cases of premature withdrawal of students from colleges owing to inability to cope with studies. Consequently a great wastage of time, money and effort is incurred. A country like India cannot afford to throw away its scarce resources in trying to impart higher education to unsuitable students. It is noteworthy in this connection that in the United Kingdom the overall wastage in higher education inclusive of failure in examinations is

* For position in other countries please refer to Appendix 36.

** Report of the Committee on Higher Education II.31 p. 8.

*** Article 26 lays down that higher education shall be accessible to all on the basis of merit.

only about 14%. In India, the figure is much higher as shown in some recent studies. The Rector of Bombay University has found that only about 25% of the students are able to complete the degree course within the minimum period prescribed for it. In another study made by a faculty member of the Baroda University, it was estimated that roughly 33% of the students leave the university before completing their courses.

Several recent studies of examination results in Indian universities indicate that the failure rate at the B.A., B.Sc., B. Com. level is generally of the order of 50 per cent and that at the postgraduate stage it ranges between 20 and 30 per cent. Another fact which has come to light is that in those universities which hold yearly examinations there is a casualty of the order of 20 to 30 per cent each year. Thus in the case of those universities which conduct several examinations the overall failure rates are very high. The combined failure rate in respect of some universities holding two examinations has been found to be as high as 81 per cent at the B.A. and 82 per cent at the B.Sc., as shown in Appendices 30-31. In such universities on the average out of 5 students who are admitted to the first degree course only 1 is able to obtain the degree.

While a number of factors such as ill-equipped libraries and laboratories, defective teaching techniques, inefficient teachers, difficulties regarding the medium of instruction etc. have some relation to the high failure rate, the 'open door' admission policy followed by universities and colleges is, in our opinion, the most important cause. We feel that unless admissions are regulated very carefully, our universities are likely to deteriorate into institutions for the elimination of the unworthy rather than education of the worthy !

Unfortunately, regarding the important question of adopting an appropriate method for a more careful selection of students for admission to universities, there are still wide differences of opinion. As pointed out earlier, many universities insist on a minimum percentage of marks for admission. It is, however, open to question whether the marking at the school leaving examinations is reliable. Recent investigations have revealed certain serious flaws in the evaluation techniques adopted, particularly when very large numbers are involved. Admissions based entirely on examination marks would thus appear to be of doubtful validity. It will, in the circumstances, be desirable to supplement the record of the school examinations with other methods of measurement.

One of the suggestions made in this connection is that students might be interviewed and a *viva voce* test given to them before admission to the universities. Some institutions already have an arrangement of this kind, but to adopt it as a universal rule is not easy, as students in India would have often to travel long distances from their homes to the colleges and universities for the interview, and if admission is not secured, they will have incurred considerable fruitless expenditure.

The U.G.C. Committee on 'Examination Reform' had proposed the introduction of two additional papers in the school leaving examination, one to test competence in the use of the language of the university and the other to test intellectual maturity for those who wish to enter the university. Most universities however considered that it would be difficult to do this. The Vice-Chancellors' Conferences held in 1961 and 1962 also did not favour the idea.

A proposal worth considering is the use of a few quick tests such as are already being applied by some professional institutions. What we have in mind is the administration of some objective tests of the kind used by the College Board in the United States of America. The Scholastic Aptitude Tests (SAT) have two sections, one to test the verbal ability of students and the other to test their mathematical ability. In USA nearly 500 colleges base their admissions on the result of the SAT. These tests are easily operated and scoring is also not difficult. With the help of the scoring key which is supplied along with the test or by using I.B.M. machines, hundreds of papers can be compared and scored in 10 to 15 minutes. It is interesting to note that the Robbins Committee also has supported similar experiments in the United Kingdom.

We are aware of the difficulty of obtaining the technical personnel required to construct, administer and interpret objective tests. It may not be feasible for each university to have a psychometric unit. It, therefore, appears necessary to have a central agency for conducting the programme. Such an independent agency may be set up by an institution like the NCERT or the Indian Statistical Institute, Calcutta, both of which already have some experience of work in the field of objective testing.

We are not suggesting that the use of scholastic aptitude tests is the only way in which admissions to the university could be made more selective and reliable. The point to be considered is whether the lower levels of achievement in the school leaving examination could be considered adequate for university education. We feel that the standard of a mere 'pass' in the school leaving examination cannot at present be regarded as adequate for admission to a university. It would, therefore, be necessary to admit only such students as have obtained a fairly high percentage of marks at the school examination, it being left to each university to fix the minimum marks after taking into account the standard of the school leaving examination in its region. It may also be desirable to supplement it by giving special weightage to marks obtained by the student in certain subjects like languages and mathematics. For those who desire to go in for science courses, the marks obtained in science subjects and for those who want to take up arts courses, the marks in the corresponding subjects could be given special consideration. Some schools maintain a cumulative record of the performance of their students on the basis of periodical tests, extra-curricular activities etc. Such ratings by teachers will also be found

useful. Some colleges and universities have also introduced interviews and special written tests for finding out the suitability of candidates.

We realise that it is not possible to prescribe any particular method or combination of methods for discovering the aptitude of students for university education. Each university will have to find out for itself, by experimentation over a period, the correlation between the results of the different methods and the scholastic performance of the students, so that it could arrive at the best method of choosing students. We regret that so far universities have taken practically no interest in dealing with this problem. We hope that they will start experiments in this field in order that the problem of wastage resulting from defective admission of students could be tackled in a successful way.

The programme of making admissions more selective raises the question of dealing with those who are refused admission. We are fully alive to the deep sense of frustration they may feel on being rejected. It would therefore be necessary to think of alternative ways in which they could be usefully engaged. We should first approach this question at the school level by instituting a number of training programmes for diverting students from the universities. For this purpose, the number of technical schools, polytechnics, trade schools and other similar diverse courses of instruction will have to be greatly increased. If the school system could contain a number of terminal points from which students could be diverted to technical and vocational courses, instead of making all the school population to go through the entire gamut of an eleven or a twelve year course before doing so, we shall also be relieving the pressure on schools of those who are neither inclined nor suited for scholastic studies. This will also relieve to some extent the pressure of numbers on the universities and colleges.

Another way in which this pressure could be reduced is by providing correspondence courses, part-time courses, evening courses etc. for those who aspire to possess university degrees but are not able to enrol in the ordinary courses. Considerable use has been made of such devices in U.S.A., U.K. and U.S.S.R. and their use is on the increase all over the world. At present in India only employed persons are entitled for admission to institutions which offer evening and part-time courses. We suggest that this restriction be removed and all those who desire to make use of these facilities be allowed to do so. In a country like India where the economic factor becomes a barrier to educational advancement, it will also have other advantages. It may also be desirable to start diploma and certificate courses in the universities themselves in areas where employment opportunities exist, for the benefit of those who are found unsuitable for scholastic courses.

The full implementation of these measures, we realize, is likely to take a considerable period of time. People have to be convinced of the

soundness of the above views, alternative arrangements have to be made for post-secondary education and possibilities of employment for non-university personnel have to be created. Selection machinery is also not easily perfected. The question therefore arises as to what is to be done in order to reduce wastage and improve quality in the interim period, which may be very long.

In this context we feel that it will be desirable to provide for two streams of undergraduate education—a pass and an honours stream. The honours course will be open to the intellectually abler students, while access to the pass course would be available to almost all those who desire to have the advantage of higher education, in spite of efforts to divert them to other courses. The honours stream could also flow directly into the postgraduate area. The point to be emphasized is that unless special provision is made for the education of the intellectually superior students, their potentialities may remain undeveloped in the conditions now prevailing in a large number of our institutions. There should, of course, be a certain degree of mobility between the honours and pass courses. If, for instance, a student has not done well in the honours course he should be put in the pass course. Similarly, if a student of the pass course shows promise it should be possible to shift him to the honours course.

Another suggestion that has been put forward for the improvement of quality in the midst of increasing numbers and democratic pressures for entrance to the universities, is the establishment of central institutions of higher education in different parts of the country, perhaps one in each state, where admissions could be strictly regulated. The advocates of this proposal point out that the Central Government may be better able to regulate admissions, being somewhat remote from the local situation. It is further stated that this condition is being fulfilled in a number of professional institutions run by the Central Government. Such a measure is commended also because of the additional advantage of strengthening the forces of national integration.

The point that we wish to emphasize is that unless admissions are regulated and confined to candidates of the required intellectual calibre and attainments, we shall continue to be faced with failure rates of a high order involving considerable waste of resources and human effort. A way therefore has to be found to make university education a more rewarding experience for those who are admitted to the universities and a more fruitful expenditure of resources for the nation as a whole.

The next question on which universities should agree relates to the minimum age for admission to the university. It is not always remembered that the average age at which a boy graduates at an Indian university is lower, by perhaps as much as two years, than the corresponding age in Britain or the United States. The Central Advisory Board of Education had accepted the following resolution at its meeting held in New Delhi in January, 1955:

“the first degree course should be of 3 years and 17 + should be the minimum age for entry into the university”.

The University Grants Commission also had considered this question in February 1960 and commented as follows :

It would be desirable to prescribe a minimum age for admission to university courses. It was agreed that while 17 (+) may be desirable to be prescribed, it would be difficult immediately to enforce it and therefore, it was decided that it might be suggested to universities that for the present, as a first step, minimum age of 16 (+) might be prescribed for admission to the first degree courses.

The above suggestion had the additional support of the Conference of Principals held in 1964. It is therefore surprising that all universities have not implemented this recommendation.

The third question on which there should be some concurrence among universities concerns the subjects which should constitute the core which every student should have studied for admission to a general Arts or Science degree course. There may be differences of opinion about electives being permitted in the course on the lines recommended by the Secondary Education Commission. But it is important that whether electives are permitted or not, all students should have some knowledge of certain subjects. These, it has been accepted in general, should be science, mathematics, history and geography, apart from languages.

Among the languages, the most important is English, and universities should insist on a certain ability on the part of students to speak and write English. Whatever may be the medium of instruction and examination in the universities, all are agreed that the teaching of English should be considerably strengthened. The policy, therefore, of reducing the standard of English in schools is unwise. So far as the universities are concerned, they would be justified in demanding that the standard of English of university entrants should come up to a certain level. The student should be able to read books, journals and reports in English and to follow lectures in the class in English. This is necessary if the student is to have access to the wider world of knowledge.

Another principle which appears to be basic to a sound admission policy is that admissions should be related to the existing facilities in a department or college. During the course of our visits to universities, we were informed by the authorities concerned that they were persuaded or pressed to admit into departments/colleges more students than were justified by their resources. Such overcrowding makes it difficult to give good education to any of the students admitted to the college. Equipment, class rooms, teachers are all rendered inadequate. It may be mentioned that in the United States, State Governments accept the view

that they must provide higher education to all those who complete the school course in their State, but they do not interfere with the large number of colleges and universities which exist without their support. Moreover, adequate physical facilities are provided in the State maintained universities at least two years in advance. The President of the university meets the appropriate budget committee and they agree upon the required amount, which is sanctioned by the State Government after scrutiny. The need for educational planning and of keeping the number of students limited to the available resources cannot be emphasised too much.

CHAPTER IV

COURSES OF STUDY

A unique feature of modern times is the rapidity with which knowledge is advancing particularly in the field of Science and Technology. It is said that in certain areas progress is so accelerated that it is not easy even for publications to keep pace with it. It is against this background that we have to look at the problem of formulating suitable courses of study in Indian universities. Unless the courses are geared to the dynamic changes taking place in different areas of knowledge, our students are likely to lag behind those of other countries where constant efforts are made in this direction. In fact, it has already been brought to our attention that in certain subjects Indian students are unable to cope with the teaching provided by some universities in the U.S.A., Canada and U.K. While the existence of this problem is noticeable even at first sight in the scientific field, it is not often realised that in the social sciences, philosophy, art and literature also there is an almost equal modification of cherished views and values current in an earlier period. It is therefore imperative that our universities should exercise great vigilance and responsibility in regard to modernisation and improvement of their syllabuses if they are to discharge their task of imparting living knowledge to their students.

The general impression that we gathered from teachers and students whom we met was that for a variety of reasons, improvement of syllabuses was not easily effected. Both undergraduate and postgraduate courses generally remain unchanged for a long time with the result that teaching in the different subjects tends to become out-of-date. Even in universities where attempts are made to revise syllabuses radical alterations are difficult to make. Except in a few universities no serious attempt has yet been made to evaluate syllabuses in the light of modern developments. This conclusion is also supported by the findings of a number of committees appointed by the University Grants Commission to review courses of study.

The problem of revision raises some fundamental questions regarding the objectives of teaching which have to be kept in mind while framing and reforming the syllabuses. It is evidently an error to treat syllabuses as a comprehensive list of topics to be taught. The first exercise that we recommend in any attempt to formulate courses is that of defining what we expect to achieve at a particular level. Unless this is done, syllabuses are likely to lack purposiveness and clarity of content. A statement of objectives will help both teachers and students to realise what the aims of teaching and learning are in a particular subject and at a particular level. It will then be possible also to have a clear idea of the way in which examinations could be made to measure the intellectual

attainment of students instead of their ability to reproduce information as is the case at present.

We are sorry to find that universities in India have not addressed themselves to this task. Objectives are invariably confused with syllabuses and as a result, the emphasis is placed on the quantity of knowledge rather than on its standard or quality at different stages of university education. We should have a clear idea not only about the general attainments to be aimed at, but also regarding the special abilities, students are expected to develop in different subjects. We attach great importance to this since in its absence, teachers as well as students are left in the dark as to what they are expected to achieve. An illustration of an attempt to define objectives in a number of subjects at the undergraduate level is given in Appendix 25.

The responsibility of drawing up courses of study in different subjects and modifying them periodically belongs to the Boards of Studies in the universities. One reason why our courses of study have not kept pace with developments in different fields is that the procedure for revising them is very rigid and laborious. In most universities decisions of the Boards of Studies are not final till they are approved by other bodies like the Faculty, Academic Council and the Syndicate. Thus in the Agra and Rajasthan Universities the recommendations of the Board are considered by the Faculty, Academic Council and the Executive Council/Syndicate, in the Bombay and Gujarat Universities by the Academic Council and the Syndicate, in the Calcutta and Visva-Bharati Universities by the Academic Council and in the Universities of Annamalai, Jabalpur, Jadavpur, Kuruksetra and Patna by the Faculty and the Academic Council. As a result of such protracted procedures, including consideration by non-academic bodies, reform of courses gets delayed and quite often many of the valuable suggestions originally made by the boards are modified or dropped. We therefore think that it is necessary to make the Boards of Studies themselves responsible for the formulation and modification of syllabi and to assign to other bodies only a nominal role, if necessary. It is also of the utmost importance to include in the Boards of Study a number of younger teachers who are better acquainted with the latest developments in the different subjects. Indian universities must check the tendency to treat membership, of such bodies as a preserve of "senior" teachers. Until merit becomes the over-riding criterion of selection of personnel for such bodies, the process of modernization of courses is bound to suffer.

Another obstacle to the revision of syllabuses is the lack of trained and competent teachers in the new areas of knowledge and techniques which the university may like to introduce. This difficulty is greater in the case of universities of the affiliating type where teaching has to be done by a large number of colleges. Necessary reforms are very often held in abeyance on the ground that there is a paucity of teachers who can deal with the new topics competently. We are thus caught in a vicious circle

in which universities continue to instruct along the old lines and the students turned out by them, when 'fed back' into the teaching profession, bring about further deterioration. Not seldom senior teachers in some of the universities are responsible for this state of affairs. These are the people who qualified some thirty years ago and are either unacquainted with or are incapable of learning the new theories. They will neither do the job of modernisation themselves nor give a chance to younger people. Sometimes the universities do not have the required equipment and physical amenities for carrying out reforms of a far-reaching nature. As in the case of any other reform, once it is delayed, it becomes more and more difficult to bring it about. Teachers are trained on certain lines, equipment is built up according to certain norms, and certain teaching techniques are adopted, all of which result in a rigid set-up. It requires courage and wisdom to alter a situation of this kind.

Finding that the universities were very slow in modifying their courses and get rid of out-dated and out-moded material, the University Grants Commission considered it desirable to set up committees of experts in different subjects in Humanities, Social Sciences, Sciences and some professional subjects to review the position. They were asked to assess the developments in particular branches of knowledge, survey the existing arrangements and recommend measures for improvement of standards of teaching and research and suggest a "model" syllabus or scheme of papers. Many of these committees have already reported. Their reports give valuable guidance and we hope that the universities will take advantage of the thinking that has gone into many of these reports and reorganise their courses of study in the light of these suggestions. The Commission may also consider the possibility of instituting standing review committees for continual study of university courses in the light of modern developments in the respective fields so that the attention of the universities may be drawn to them. It will also be desirable for the universities themselves to appoint review committees periodically to carry out a critical evaluation of their courses.

One of the ways in which desirable changes in syllabi can be brought about is to organise all-India seminars and conferences of teachers in different subjects for this purpose and to invite to such meetings experts from outstanding centres of teaching and research not only in India but abroad. They provide a valuable opportunity for the consideration of recent changes and of issues relating to objectives of teaching, conduct of courses, organization of research, teaching methods etc. in the various disciplines. The participants gain by learning from one another and are able to carry back with them to their colleagues and co-workers many valuable and stimulating ideas. The proceedings of such conferences, when published, could become a source of information and enlightenment to the teaching community. We are glad that the University Grants Commission has already taken a lead in the matter by organising seminars

and refresher courses under its own auspices and by offering encouragement to universities to undertake similar programmes. We are however of the opinion that the Commission's activity in this area needs to be enlarged and strengthened so as to include in its scope a wider range of subjects and personnel. It may even be desirable to make permanent arrangements for year round refresher courses and seminars to which teachers may be exposed for short periods in groups.

We are also happy to note that the University Grants Commission has established in some subjects Centres of Advanced Study in universities. These centres are intended to function on an all-India basis and wherever practicable to work in close cooperation with other agencies of research work operating in the neighbourhood. They aim at achieving the highest possible standards in their respective field of work—in research as well as in advanced teaching. While the centres of advanced study are expected to promote research of the highest quality, we also hope that it will be possible to make an arrangement whereby it would be possible for selected teachers from universities (including colleges) to visit these centres for limited periods of study and research. Two categories of teachers could be included in this programme: firstly, there are those whose competence in particular fields is so developed that they could take an active part in the work of these centres; secondly, and more important than the first from the standpoint of raising the quality of teaching in the universities, are those who stand in need of periodical exposure to the stimulating and educative influence of the centres. In order to cater for the needs of such groups, we recommend that each centre may have an extension section for looking after the organisation of refresher courses, summer institutes, etc. in the subject of its specialization.

While the efforts described above are intended to overcome the malaise of obsolescence in studies and research by exposing our teachers to uplifting academic influences, unless a device is built into the university system to undertake timely review of courses, continuous improvement in standards cannot be assured. One suggestion that merits serious consideration in this connection was made by Dr. Albert Sloman in his Reith Lectures entitled "A University in the Making". He referred to the need to set up a committee of experts in the University of Essex constantly to think and plan how essential reforms could be effected in its academic programmes. Indian universities would do well to have a similar body for the purpose of suggesting ways and means for effecting constant renewal of their academic spirit and achievements. It is, in other words, necessary to have watch dogs in every university to look after maintenance and improvement of standards of courses of study. We also envisage a further acceleration of the academic programme of the University Grants Commission as a positive contribution towards this end.

CHAPTER V

UNDERGRADUATE EDUCATION

One of the significant changes that have taken place in India in recent years in the field of higher education is the introduction of the three-year degree course in the place of the two-year degree course following a two-year intermediate course. In 1917, the Calcutta University Commission recommended three years for the Bachelor's degree for pass as well as for honours but the recommendation was not put into effect.* The Central Advisory Board of Education in its report on 'Post-War Educational Development in India' published in 1944 also regarded the abolition of the intermediate stage and the addition of one year to the high school course and the other to the university an essential and urgent reform.† In 1943, the Delhi University took a lead in the matter and changed over to a three-year degree course preceded by an 11-year higher secondary course. Some other universities viz., Mysore and Travancore also tried the experiment but had to abandon it owing to difficulties of various kinds. The University Education Commission, 1948-49 proposed that students should be admitted to the universities—colleges for Arts and Sciences as well as professional colleges for Medicine, Engineering and Technology after 12 years of schooling, i.e. after they have passed the qualifying test corresponding to the intermediate standard. The Commission recommended that the course for the Bachelor's degree in Science and Arts whether for pass or honours, should be of three years' duration.**

The Secondary Education Commission, 1952-53 recommended the abolition of the intermediate stage to increase the period of secondary education by one year and to plan the three-year degree course at the university stage.*** The Commission recommended the following organisational structure for secondary education after the 4 or 5 years of primary or junior basic education: (1) A middle or junior secondary or senior basic stage which should cover a period of 3 years; (2) A higher secondary stage which should cover a period of 4 years.

The three-year degree course pattern was endorsed by the Central Advisory Board of Education, at its meeting held in New Delhi in February, 1954, the Conference of Vice-Chancellors of universities and Chairmen of

* It is, however, understood that a three-year honours course was introduced in the Dacca University, which is now in Pakistan. This was followed by a one-year M.A. course thus keeping the duration the same viz. 4 years. The Southern universities also had a three year honours course.

† Report of the Central Advisory Board of Education on 'Post-War Educational Development in India' otherwise known as the Sargent Report, page 29.

** Report of the University Education Commission, p. 134.

*** Report of the Secondary Education Commission—p. 31.

Boards of Secondary Education held in New Delhi in January, 1955 and the Inter-University Board of India at its meeting held in January, 1955 at Patna. Finally, the Central Advisory Board of Education accepted the following resolution of the Ministry of Education on the subject :

“Resolved that the universities in India should take immediate steps to ensure that the change-over to the new pattern of educational reorganisation, i.e., a higher secondary school course be continued up to the age of 17+ to be followed by a three-year integrated course leading to a Bachelor’s degree is completed by 1961 at the latest”.

A committee was appointed in October, 1956 under the Chairmanship of Dr. C.D. Deshmukh, then Chairman of the University Grants Commission, to work out the estimates of expenditure that would need to be incurred on the introduction of the three-year degree course. The recommendations of this committee were accepted by the Ministry of Education as the basis for assisting universities and colleges towards the introduction of the three-year degree course.

The three-year degree course is now the accepted pattern of collegiate education everywhere except in the University of Bombay and the 4 state universities in U.P., viz. Agra, Allahabad, Gorakhpur and Lucknow. The University of Bombay has declined to introduce the new pattern on academic grounds. The University is thinking of continuing the two-year degree course for pass students and instituting a three-year degree course for honours students after the intermediate stage. The Government of U.P. propose to introduce the three-year degree course after the intermediate stage, which they consider to be an educationally sound policy. In all, 42 universities have introduced the three-year degree course scheme as detailed in Appendix 6.

Originally, the idea of a three-year degree course was put forward on the ground that a period of continuous instruction for three years had many advantages as recognised in other countries, notably in the U.K. and U.S.A. It was held that while the achievements of our students were comparable, age for age, with those of advanced countries, there was hardly any equivalence in the degrees held by them, as the degree in India was acquired after 14 years of study as compared to 16 years in the U.K. and U.S.A.* Although most universities think that this new pattern of university education is still in the experimental stage and a few years of trial should be given to it before a proper assessment is made, there are some who feel that it has not brought about any real improvement. An estimate of the universities of the impact of the three-year degree course on standards of university education can be seen in Appendices 7 & 8.

We have to point out that many of the conditions essential for the implementation of the three-year degree course pattern have not been

* University Education Commission—p. 135.

fulfilled. This reform was expected to provide a compact, integrated course of study for the first degree and a stimulus to improve the standards of teaching and examination. The Three-Year Degree Course Estimates Committee envisaged that the new system would provide an opportunity to revise the syllabuses, introduce general education courses, reduce overcrowding in the colleges, improve the teacher-pupil ratio, strengthen laboratories, replenish libraries and, wherever possible, institute a sound tutorial system.* We invite attention also to the observation of the Second Deshmukh Committee on the three-year degree course that "while some of the universities had introduced fairly well integrated courses, some others followed different patterns in regard to the prescribed syllabi. Further, certain universities had merely split the four-year college course into 1+3 year pattern in place of 2+2 years."**

It is true that improvements cannot be brought about by a mere increase in the number of years. Adequate physical facilities like class rooms, libraries and laboratories have to be created and a proper teacher-pupil ratio brought about. It has also to be seen that well qualified and able teachers are appointed in the undergraduate field. In other words, unless the new pattern is harnessed to conditions which are conducive to a qualitative improvement of both school and collegiate education, the real purpose behind it would not be served. We are afraid that this aspect of the three-year degree course scheme has not been fully appreciated.

This brings us to the question of the number of years of schooling which a student should have before he enters the university. It is sometimes said that the student who is admitted to the three-year degree course is not as good as the first year student of the old two-year degree course. This is only to be expected because of the fact that many of the students who come to the first year degree course have had only 11 years of schooling as compared to 12 years of school and college which university entrants under the old two-year degree course had. This situation has arisen mainly because the recommendations of the University Education Commission and the Secondary Education Commission have been accepted only partially. While the University Education Commission was in favour of increasing the duration of the two-year degree course to three years, it definitely had in mind that the two-year intermediate as it existed at the time would continue. In other words, a student should have had 12 years of instruction before he entered the university.

The Secondary Education Commission approached the question from the point of view of raising the standard attained at the end of the school course. The Commission's main concern was that of raising the standard of school education to a level at which it would be an adequate terminal point of education for a large proportion of boys and girls. It

* Report of the Three-Year Degree Course Estimates Committee, p. 4.

** Report of the Committee set up by the Panel of Education, Planning Commission, p. 6.

was with this object that the Commission suggested the extension of the high school stage from 3 to 4 years. The main difficulty in implementing the recommendations of the Secondary Education Commission was that the duration of the school course was not uniform throughout the country.

The report of the Secondary Education Commission left the question of the duration of the secondary stage undecided. On the one hand, it suggested the extension of the secondary stage by one more year i.e., the total duration to be at least 11 years; on the other, it envisaged a secondary stage of 4 years after 8 years of elementary education which gives a total of 12 years. The Implementation Committee appointed by the Central Advisory Board of Education in November, 1953 also left the question vague. It recommended the following pattern of secondary education: (a) 8 years of elementary education (b) 3 or 4 years of secondary education where there will be a diversification of courses.

The question whether the duration of the secondary stage should be 11 years or 12 years was keenly debated in the following years. In the absence of any clear lead in the matter, it was difficult for the states with a 10 year school system to accept the financial burden of adding two more years. In the circumstances, the Central Advisory Board of Education adopted the following resolution at its meeting held in New Delhi in January 1955:

- “(a) the first degree course should be of 3 years and 17+ should be the minimum age for entry into the university;
- (b) the end of the secondary education at 17+ should mark a terminal stage in education and prepare a student for life.”

In states where the old school course was 10 years followed by 2 years of intermediate and 2 years of degree course, the changeover provided for 10 years of the old school course plus one year of pre-university plus three years of degree course or 11 years of higher secondary course followed by three years of degree course. In states where the school course was already of 11 years' duration followed by two years of intermediate and two years of degree course, the change implied the abolition of the intermediate stage, so that 11 years of higher secondary course would be followed by three years of degree course, bringing about a reduction of one year in the total duration of the courses leading to the first degree.

The progress achieved in upgrading high schools to higher secondary pattern has been extremely slow. The work was taken up for implementation in the Second Plan period, but only 17% of the schools had been converted to the higher secondary (11 years) pattern by the end of the Second Plan. The target for 1965-66 is only 40%. Thus 60% of the schools will remain unconverted into higher secondary schools even if the proposed target is reached by the end of the Third Plan period. The states are finding it extremely difficult to appoint trained, qualified teachers

for these higher secondary schools. Class 11 of these schools is equivalent to the 1st year class of the old intermediate and in setting up these schools it was hoped that the full intermediate course would be covered in classes 10 and 11. This goal has not been realised and from all the evidence that has been presented to us, we can say that the quality of education provided in the secondary schools is very poor. In many states the teaching of higher secondary classes has been entrusted to pass graduates, some of whom have taken only condensed postgraduate courses of 2 or 3 months. The shortage of trained teachers is particularly great in Science subjects and in mathematics. Even in government colleges some departments are running with 40 to 50 per cent of the sanctioned staff strength. The library and laboratory facilities are also inadequate. It is, therefore, not surprising to find that universities are dissatisfied with students joining the first year of the three-year degree course.

It is in this context that the question is being asked whether it would not be educationally sound to have a secondary stage of 12 years' duration followed by three years of degree course. In U.K., U.S.A., and in most European countries like Germany, France and Switzerland, at least 12 years of schooling are considered necessary before a student enters the university. The University Education Commission in India had recommended that the standard of admission to the universities should be the intermediate examination which was taken by a student after 12 years' study at a school. The proposal could not be put into force mainly on financial grounds.

Although some educationists are of the view that the present duration of 14 years is adequate, in recent years, there has been a general shifting of opinion in favour of the total duration of secondary and university education being 15 years. At the last Vice-Chancellors' Conference held in New Delhi in October, 1962, opinion was unanimous in favour of a total span of 15 years for the first degree and 16 or 17 for a technological degree. The Principals' Conference held in New Delhi in May, 1964 also agreed that the first degree should be awarded after a 15-year period of study, the first 12 years being split up in any convenient way and the remaining three years constituting the first degree course. It may also be mentioned that two states have already adopted a 12-year pattern of preparation for university education. In Kerala this has been done by confining school education to a 10-year course to be supplemented by a 2-year pre-university course in a junior college and in Madras by having a 11-year school system followed by a pre-university course in the colleges.

While most of us support this proposal, we would like to point out that mere lengthening of the school period is not likely to result in any educational improvement, unless steps are also taken to see that standards are raised to a higher level. A mere prolongation of the period unaccompanied by measures for qualitative improvement may only give rise to worse evils than those that characterise the 11-year system. A concerted

effort has to be made to reform the school course so that it may fulfil, the two-fold aims of serving as a sound system of middle education, and also as an adequate preparation for the university.

The period of 15 years may be divided either as (1) 12 years of school education followed by a 3-year degree course, or (2) 11 years of school education followed by one year of pre-university and 3 years of degree course, or (3) 10 years of school education followed by 2 years in an intermediate college or junior college and 3 years in a degree college. Of these alternatives, the first one having 12 years of school education should be attempted only in exceptional schools which are well-equipped to maintain high standards. First, no state in the country is in a position to extend the school course to 12 years. Secondly, the hope expressed by the Secondary Education Commission that the higher secondary stage would become a terminal point is not likely to be fulfilled in the near future. Attempts made by the government in recent years to modify the minimum qualifications for a number of posts in the lower categories have not met with any great success. A commission appointed under the chairmanship of Shri A. Ramaswami Mudaliar recommended that for clerical appointments preference should be given to those who have completed the school course by prescribing the maximum age of 17 for purposes of recruitment. This recommendation has not been implemented. Moreover, it has been found from experience that it is not possible to provide in the schools M.A.'s. and M.Sc.'s for teaching in the last two years of a 12 year course. The third alternative has the merit of offering the possibility of providing two terminal points of school education which could be utilised by the students for either taking up some kind of employment or for diverting their education in the direction of vocational courses; thus, in the process, also reducing the pressure of numbers on the universities. This, of course, would be a significant gain not to be lightly thought of in the present situation.

The question regarding the location of the two years following the 10 years schooling is controversial. While private managements would welcome attachment of the two years to degree colleges, as it would substantially increase their fee income, the college itself would tend to suffer from it. The number of students in these two years may out-number the college students by 2:1. Many of them would also be of the school going age and the methods of instruction to be adopted would consequently have to be different from those used for the 3-year degree course. In the net result, the entire atmosphere of the college might deteriorate. One solution to this problem may, however, lie in the direction of running the pre-university and college courses as separate administrative units on the same campus. The advantage here would be that while the management problems could be independently dealt with, a number of facilities could be organised in common, pertaining to staff, libraries, laboratories, extra-curricular activities etc., which will be of distinct benefit to the pre-university or intermediate students.

There are some who favour the setting up of two year colleges as independent institutions. It is well known that such colleges are functioning satisfactorily in the United States of America where they are known as "junior colleges" or "community colleges". In the situation facing our country of ever increasing numbers flocking to the universities, the junior college could play a useful and significant role. It could provide to those who are keen to have at least a brief period of university education an opportunity for doing so with the sense of having completed a definite course, besides acting as a convenient point of departure for vocational training of various kinds. It is also possible so to organise it that it will offer instruction both in general subjects and in technical subjects. The two year vocational training could meet the growing need of the country for people capable of performing certain kinds of technical jobs. Another use to which the junior college may be put is that of making it a fit instrument for preparation of students for higher education. In the light of above considerations the balance of advantage seems to lie in keeping such institutions within the university sector. We learn that the University of Kerala has already established some junior colleges.

Out of the 42 universities implementing the three-year degree course scheme, there are some, e.g. the Universities of Delhi, Jabalpur, Kalyani, Rabindra Bharati, Saugar and Vikram which are not conducting the pre-university course. The present thinking regarding the second alternative of pre-university course is somewhat critical of its usefulness as a preparation for university studies. Most universities have expressed the view that the attainments of pre-university students are inadequate, particularly in English. The main reason is that the pre-university course has tended to be too heavy for the short period of its duration. With an examination at the end of the course and interruptions caused by holidays etc., the course is hardly of 6 to 7 months' duration. It is difficult during this period to cover the heavy syllabus, which is usually prescribed for the pre-university students. The course, therefore, needs to be reorganised, keeping in view the capacity of students as also the need for giving them an adequate grounding for higher studies. If the course is properly oriented, the pre-university can become an effective instrument for raising the standards of university studies. We do not gain much ground by having an overloaded course at the pre-university level. At this stage the emphasis should not be on covering the prescribed syllabus and testing the student by means of a written examination but on such instruction as would enable him to adjust himself to college and university life. In the formal atmosphere of the school, the student is in the habit of memorising the course and of depending on the teacher in regard to everything connected with his instruction. Now he must read books for himself and also understand what he reads. Besides initiating the student to the ways of college life, some attempt will also have to be made to enable him to question what he reads in order to develop a critical faculty. The teaching techniques at the pre-university

level will have to be in the nature of a compromise between lecturing and school instruction.

Another way in which the pre-university course can be used for preparing students for university education is by giving special attention to the teaching of the English language. In many states there is an abrupt change in the medium of instruction, which is usually the regional language at the school stage and English at the degree and postgraduate levels. Whether English is or is not the medium of instruction in the university, students are expected to read books, journals and reports in English and also to have a good vocabulary and command over simple structures. The teaching of English at the pre-university stage has, therefore, to be intensified further. Attention is invited in this connection to Appendix 10 containing recommendations made by the U.G.C. Review Committee on English, which we fully endorse.

In any consideration of undergraduate education the question of the honours course is important. At present 21 universities provide instruction for three-year honours or special courses. They are : Andhra, Bhagalpur, Bihar, Burdwan, Calcutta, Delhi, Jadavpur, Jammu & Kashmir, Kalyani, Kuruksetra, North Bengal, Punjab, (Arts only), Patna, Poona, Punjabi, Rabindra Bharati, Rajasthan, Ranchi, Sri Venkateswara, Utkal and Visva-Bharati. The Universities of Bombay and Lucknow provide special honours courses of 2 years' duration after the intermediate examination. Institution of an honours course of 3 years' duration is under examination in the Bombay University. The Panjab University has a 4-year course in B.Sc. (Honours School) in Science subjects, after which only one year of study is required for an M.Sc. (Honours School) degree. With the introduction of the 3-year degree course, the southern universities have abolished their honours degree which was formerly awarded on completion of a 3-year course after the intermediate and was treated by them as equivalent to the M.A. degree of other universities, after the lapse of one year.

There is a considerable lack of uniformity in regard to the honours course. Most universities have laid down higher qualifications for admission to the honours course. Generally speaking, candidates do not have to take an entrance examination but preference is given to those who have secured a certain higher percentage of marks at the qualifying examination. In the Calcutta University, the entrance qualification required for pass and honours courses are identical under the regulations but the affiliated colleges generally select students of the honours course on the basis of good performance at the last public examination. In the Panjab University, admission to the B.Sc. honours course is given only to students who have passed the qualifying examination in the first or second division but for B.A. (Hons.) the rules are flexible. In several universities the minimum qualifying marks for admission to the honours course vary from 40 to 50%.

There are wide variations in regard to the content of the honours courses and the basis for awarding the degree. In some universities the honours course student has to offer the same papers in subsidiary subjects as the pass course student, while in the Main (Honours) subject he has eight papers instead of three in the pass course in that subject. In the Gujarat University there is no provision for an honours course but students passing the B.A. general or special examinations in the faculty of Arts in the first or second class are declared to have passed with first class honours or second class honours as the case may be. In the Gurukul Kangri a student securing 50% marks in the final examination in a particular subject is allowed to submit a thesis in that subject. If his thesis is approved by the examiner, he is awarded the Pratishtit Alankar (B.A. Hons. degree). In the Marathwada University the course for the pass and honours degree is common upto the second year of the three-year course. In the third year students may offer either an honours course of six papers in one subject or may study the general course consisting of three optional subjects of two papers each.

We endorse in this connection the following observations of the Vice-Chancellors' Conference (1962) :

"It was regretted that many universities had given up the honours course with the introduction of three-year degree course. Apart from the possibility of providing an undergraduate course of a high standard for better students, the honours course could also be a preparation for post-graduate study, stress being laid on intensive study of the subject subsequently. In contrast to honours course, the pass course would be of a general nature. It is, however, necessary to make postgraduate courses available to those who had shown special ability even in general courses".

We would like to stress the desirability of instituting a variety of courses to suit students of different abilities. In a large country like India, it is not possible to have a uniform standard of school education. Students also come to the universities from different economic and social situations. There has been a substantial change in the type of students that seek and gain admission to the university. Many of these students do not adapt themselves easily to the university atmosphere, and the problem of raising the general standard is thus made more difficult. The suggestion made by us earlier that of—providing two kinds of courses—pass and honours—will go a long way to suit the abilities of different kinds of students. We also envisage that the main purpose of the pass course would be to provide a general education for preparing students for employment in the administrative services, business organisations and other sectors, where specialisation and professional training are not called for. The attempt at this stage therefore should be to produce young people with a trained mind, scientific outlook, cultivated tastes and a sense of citizenship and responsibility. While the objective of the honours course will also include attainments of this kind, efforts will have to be made to impart to students who

have taken up this course some specialisation on the basis of which post-graduate studies could be prosecuted.

An important reform of undergraduate studies that is at present engaging the attention of several universities is that of introducing courses in what is known as 'general education'*. We believe that, interpreted imaginatively and in a flexible way, the idea of 'general education' may well serve as a principle of reorganisation of undergraduate education. While it is true that justification for the introduction of general education courses in our universities does not arise from the need to counteract the evils of specialisation, except in the case of honours students, the fact that the undergraduate stage represents a terminal point of higher education for a large majority of undergraduates (nearly 80%), has to be considered. It should be a matter of serious concern to us whether the young men and young women who come out of our universities year after year are really 'educated persons'—persons with a rational outlook and a capacity to think and act as enlightened individuals. Our support of general education courses, therefore, does not stem from any special theory of education, but grows out of a conviction that in Indian universities reform of undergraduate teaching has become overdue.

It is also essential to expand the scope of undergraduate courses. There could be variations on the basis of one main subject and two subsidiary subjects or three subjects of equal level or a combination of Arts and Science subjects. We are thinking of a broader spectrum of subjects and combination of subjects to provide scope for the expression of the latent talents of students. Universities have been following the traditional method of combining subjects and very little thought seems to have been devoted to the introduction of new subjects and their alignment. The argument that the present system is unalterable in view of what follows in the postgraduate courses could be met with the reply that the postgraduate courses themselves could be reformed. In other words, both undergraduate and postgraduate courses have to be reviewed in the light of modern developments in the academic disciplines and courses refashioned to make them more flexible and to provide room for a wider selection of subjects.

* Such programmes are already in operation in one form or the other in the following universities: Aligarh, Andhra, Banaras, Baroda, Gujarat, Jadavpur, Jodhpur, Kerala, Mysore, Omania, Panjab, Poona, Punjabi, Rabindra Bharati, Rajasthan, Roorkee, S.N.D.T. Women's, Sri Venkateswara, U.P. Agricultural and Utkal. The Universities of Bombay, Jabalpur, Marathwada and Vikram have decided to introduce general education programmes in the near future, while Agra, Delhi, Jammu & Kashmir, Kuruksetra and Nagpur Universities have appointed committees to consider the question. The scheme is at various stages of consideration in the Universities of Allahabad, Bhagalpur, Gorakhpur, Kalyanai, Lucknow, Magadh, North Bengal, Patna, Ranchi and Saugar.

CHAPTER VI

POSTGRADUATE STUDIES AND RESEARCH

In recent years, there has been a rapid growth of postgraduate education in the country. While enrolment has increased at every stage of instruction, the increase has been more spectacular at the postgraduate level. Postgraduate enrolment as a proportion of the total enrolment in universities and colleges was 5% in 1950-51. It declined during the First Plan period and reached the low figure of 4.3% in 1955-56. Since then there has been a gradual increase in postgraduate enrolment. In 1963-64 it stood at 76,685, constituting 5.5% of the total enrolment including all stages of higher education. By far, the largest enrolment has been in the faculty of Arts. In 1963-64, the faculty of Arts accounted for 57.3% of the total enrolment at the postgraduate level, Science for 22.2% and Commerce for 9.2%. The professional faculties had only 11.3% of the total enrolment.

The rapid growth of postgraduate education in the country has been largely the result of special efforts. Since the establishment of the University Grants Commission in 1953, much emphasis has been placed on its development. During the Second Plan period alone, 103 new postgraduate departments were established, 64 in the universities and the rest in affiliated colleges. The Commission has given considerable assistance towards the building up of libraries, laboratories, academic blocks and hostels and appointment of additional staff to enable the universities to create congenial conditions for postgraduate work.

It is a matter for some satisfaction that failures at the M.A./M.Sc. stage are fewer than at the undergraduate level. During a period of 13 years, for which information is available, it has never exceeded 30% in the final examination as shown below* :—

Year	M.A.			M.Sc. (including M.Sc. Home Science)		
	No. appeared	No. passed	Pass %	No. appeared	No. passed	Pass %
1949	4,654	3,632	78.0	1,137	846	74.4
50	5,940	4,434	74.6	1,267	984	77.7
51	8,123	5,969	73.5	1,723	1,398	81.1
52	8,404	6,467	77.0	2,085	1,641	78.7
53	9,256	7,038	76.0	2,234	1,780	79.7
54	10,488	7,889	75.2	2,772	2,146	77.4
55	11,754	8,886	75.6	3,108	2,348	75.6
56	13,630	9,528	70.0	3,263	2,529	77.5

* In universities which have an examination at the end of each year of the two-year course the total failure rate is of a slightly higher order.

57	13,009	10,483	80.6	3,652	2,933	80.3
58	14,355	11,670	81.3	3,724	2,942	79.0
59	17,462	13,997	80.2	4,376	3,508	80.2
60	19,053	15,662	82.2	4,398	3,513	79.9
61	23,013	18,926	82.2	6,108	4,721	77.3
62	25,217	21,003	83.3	6,726	5,195	77.2

While the pass percentage in itself cannot be taken as an indication of high academic standards, it is significant. A higher rate of success in this field appears to be due to the greater care taken by universities in the selection of students for postgraduate courses, provision of better facilities and better instruction. By and large, the quality of students who are admitted to the postgraduate courses is higher than that of those admitted to the undergraduate courses. Greater emphasis is also laid on the aptitude of students for studies in which they seek to specialise.

While we may feel pleased with the achievements that have been accomplished so far, there is hardly any room for complacency. A great need exists for strengthening and consolidating the gains in order that standards of postgraduate studies in our universities may compare with the best prevailing anywhere in the world. While university education in India at all levels should conform to international standards, it should be more so in the area of postgraduate studies. As Dr. D.S. Kothari pointed out in his convocation address to Visva-Bharati (24th December, 1963), "Quality is important at all stages of education, but when it comes to postgraduate studies and research even the 'second best' is not good enough—it will not do. We must go in for the best attainable." It is also to be remembered that the postgraduate stage is the most important stage of university education from which scholars, scientists, leaders of thought and research workers are expected to emerge. The greatest care has therefore to be taken in the development of postgraduate education.

The requirements of government, industry, business, professions etc. are largely met by well educated persons who have completed the undergraduate course and have taken the first degree. The present tendency of employers to demand a Master's degree for posts for which a first degree should suffice is largely explained by the low standard of most of our graduates. If the quality of undergraduate education is improved, as indeed it should be, it would be possible to exercise greater selectivity in admissions and intensify the teaching and training programmes of the postgraduates so as to raise them to the highest possible level.

The main objective of postgraduate education should be the acquisition of specialised knowledge. We have to aim at the production of competent scholars and scientists to carry on work of the universities, research laboratories and other learned organizations.* We have also to inculcate in

* These areas of work, of course, do not exhaust utilization of the services of postgraduate students. There are other fields of public and private activity in which their superior attainments will be found useful.

the postgraduate students a thorough understanding of the subject, capacity for critical thinking, independent judgement and a quickening of the intellectual impulses which lead to research. As pointed out by the University Education Commission: "In honours course we teach the students to learn facts and to think effectively about them. In the M.A. and M.Sc. courses we should train the students to take to careers of scholarship and research".*

Careful preparation and observance of requisite conditions are thus called for to make the postgraduate programme a success. Expansion in this sector should be brought about with greater deliberation, care being taken to ensure the pursuit and achievement of excellence. We regret to say that all universities, are not equally vigilant in this regard. Unitary universities, of course, are in a better position to satisfy the requisites than affiliating universities, where colleges also possess arrangements for this purpose. Postgraduate teaching in colleges is permitted by these universities under different rules and regulations. In some universities like Bihar and Osmania postgraduate courses are concentrated in one or two colleges. In the Agra University, on the other hand, postgraduate teaching is mainly taken care of by a large number of affiliated colleges. In the Panjab University, colleges are allowed to have postgraduate classes in certain subjects only. In the Bombay University, a common time table is drawn up by the committee of recognised teachers in these subjects and lectures are arranged at one or two places. Another variation is provided by the Gauhati University, which permits postgraduate teaching in colleges in three courses only, viz. M.Sc. (Agronomy), B.T. and Law. Yet another variation is that of the Madras University where teaching is done on an inter-collegiate-cum-university basis.

Out of 1938 colleges in the country in the year 1962-63, 348 were concerned with postgraduate teaching. The distribution of M.A. and M.Sc. students between the teaching departments of the universities and affiliated colleges was in the ratio of 4:3 approximately. This is a fact to be specially noted, since it means that a very large number of institutions to which postgraduate students are admitted may not have sufficient competence for imparting such instruction. For, many of the colleges lack essential laboratory and library facilities and teachers of the requisite ability. Some of the colleges do not possess even the basic paraphernalia required for undergraduate education.

We should like particularly in this connection to refer to two drawbacks in the colleges. Firstly, except in very few colleges, research facilities are totally non-existent. This is a serious deficiency, since postgraduate teaching and research go together and in the absence of arrangements for research, teaching is bound to be 'bookish' and postgraduate students are likely to be spoon-fed in the same way as undergraduates usually are.

* Report of the University Education Commission, p. 143.

Another adverse consequence is that good teachers are not likely to be attracted to these colleges. Inadequate salaries and lack of research facilities together can bring about a situation which will make it almost impossible for many of the colleges to have on their staff, scholars and scientists of ability and repute. While it is true that the existence of postgraduate departments in the colleges will have a certain uplifting influence on the institutions as a whole and undergraduate teaching could also be strengthened by it, such gains have to be carefully weighed against the suitability of the institution for undertaking postgraduate studies.

Another result of the situation outlined above pertains to the quality of the students who are admitted to postgraduate classes in the colleges. It is well known that good students generally prefer to join university departments and only those who are found unacceptable to them seek admission to the colleges. The colleges on their part do not exercise any strict control in the matter of admission, as their financial needs make them unwilling to reject applications. Cases have come to our notice of principals of colleges admitting students without even consulting the heads of the departments concerned in their anxiety to recruit a sufficient number of postgraduate students to enable them to increase their revenues. The colleges are also unable, limited as their resources are, to provide for the teaching of important new areas of subjects. There seems to be a tendency to confine courses to certain stereotyped papers which in their turn often act as an impediment to improvement of syllabuses.

We are convinced that the interconnections between colleges and universities are so close and intimate that if identical conditions and facilities are not maintained in the two sectors, the chances are that the poor standards in the former will pull down standards in the latter. It has therefore to be laid down that postgraduate colleges are allowed to come into existence only if they satisfy certain minimum conditions. Although conditions are prescribed for recognition of colleges for postgraduate work, in practice the rules are ignored or waived. An effective check has to be found to prevent the mushroom growth of postgraduate colleges. It may be desirable to consult a body like the University Grants Commission, which is specially concerned with the maintenance and improvement of standards at the postgraduate level. A postgraduate college started at a centre where even undergraduate education has not taken roots can never hope to succeed. In fact the proper method of developing postgraduate education in the colleges is to organise it in places where at least 3 or 4 good colleges may pool their resources in equipment and teaching personnel to evolve a system of co-operative education. This will also make possible a more effective utilisation of available resources. It will eliminate further unnecessary duplication and the time and labour thus saved can be used for tutorial or seminar instruction. Owing to financial difficulties, it may not be possible for all postgraduate colleges to have teachers of outstanding merit. One solution perhaps would be

for each university to appoint professors or readers, in addition to its normal staff, who could visit these colleges and deliver a course of lectures to postgraduate students. Such 'floating staff' would give an opportunity to college students to come in contact with specialists in various fields.

It has already been pointed out in an earlier chapter that the advancement of the frontiers of knowledge by research and investigation is as important a function of the university as preservation and communication of existing knowledge. There is no inherent contradiction, in our view, between these two aims which actually flourish in combination. There are those who say that teaching is more important than research in universities. Not a few also hold the contrary view. The controversy regarding the comparative importance of either the one or the other seems to us to be futile, as it does not take into account the intimate connection that exists between the two. There cannot be good teaching without the stimulation of constant critical study on the part of the teacher. Again unless the fruits of research are made available to the academic community, research loses much of its meaning and real significance.

It is a matter for gratification that the research work of our universities has made considerable advance in recent years. In the beginning, they started as examining bodies and research was left to the initiative of a few individual scholars and teachers working on their own. The Calcutta University, under the Vice-Chancellorship of Asutosh Mookherjee, was the first to set up postgraduate departments in 1914. The university was able to draw a number of eminent scholars from all over the country and build up departments with high traditions of training and research. After the first world war, a number of unitary universities with facilities for postgraduate courses came into being. Many of the old affiliating universities also established postgraduate and research departments in certain subjects. The progress since then in respect of the establishment of research departments has been so rapid that it can be said that the leadership in the matter of fundamental research remains with the universities. It is true that a good deal of research is being done by institutions and organisations outside the universities, but it is in the universities that research can grow in a natural way.

Though much has been achieved in the field of research much more remains to be done. One of the obstacles in the way of its rapid development is that modern research, unlike research in the old days, requires costly equipment. While it should be the aim of all universities to encourage research in subjects for which they have suitable facilities and personnel, it would be desirable to bring about much greater co-ordination between one department of the university and another and also between one university and another in the matter of undertaking research programmes.

One way of doing this would be by the dissemination of information relating to research work already completed and in progress. It will be

extremely useful if the University Grants Commission or a body like the National Council of Educational Research and Training brings out annually hand-books containing summaries of selected theses and dissertations. It is also necessary to make full use of available resources. Instances have been reported to us in which costly equipment imported from abroad have not been utilised properly in the absence of trained personnel. As the Vice-Chancellor's Conference held in 1961 observed, research has to be built up around personalities who have made a name in particular fields.

Apart from promotion of closer cooperation among the universities themselves, it is also important that universities take the fullest possible advantage of the potentialities available in institutions outside the university. A number of organisations devoted to research/training viz., the Atomic Energy Commission, the Tata Institute of Fundamental Research, Institutes of Higher Technology, the Indian Statistical Institute, the Zoological, Botanical, Geological and Archaeological Surveys of the Government of India and the National Laboratories of the Council of Scientific and Industrial Research are now in existence. Unless there is active collaboration between the universities and such institutions through periodical exchange of staff and other measures, the policy of bringing into existence large numbers of non-university organisations of this kind can result only in serious damage to the universities, as the better salaries and other amenities offered by these institutions tend to take away some of the highly qualified and talented teachers from the universities. We wish to stress the seriousness of this problem and invite the attention of Government to it.

It is well known that universities are not always able to obtain in sufficient numbers persons of high competence for their research departments. The first class students are generally lured away to administrative jobs or to industrial undertakings or business concerns. There is also a diversion of first class talent to engineering, medical and other professional courses. Research thus becomes largely confined to second class students. We do not wish to suggest that second class students are unsuitable for research. In fact under the present examination system, all the first class students may not be intellectually superior to the rest and a number of second class students may be even superior to the first class students. There seems, however, to be a tendency in some universities to register candidates without due attention being paid to their research aptitudes. The usual procedure is that an application is made by a candidate to supplicate for a research degree, indicating the topic together with or without a synopsis of the work proposed to be done. This is placed before a Research Degree Committee, which quite often has to judge the fitness or otherwise of the candidates in a hurried way, as the committee has to deal with a large number of applicants. It is therefore doubtful whether the committee takes into account relevant aspects of each case before a decision is taken. We feel

that the acceptance or refusal of a research candidate should be the direct concern of the professor/supervisor. The main thing to look out for is the quality of the candidate's mind and his fitness for research rather than his paper qualifications.

A number of foreign universities, especially the American universities, prescribe a regular course work comprising two or three papers related to the field of the thesis for the Ph.D. degree. It is of the utmost importance that the research student should be introduced to the methods of research before he is permitted to write his thesis. Where a regular course is not possible, some training will have to be arranged for students in the techniques of collection, appraisal and collation of data. It would be useful if the student is asked to prepare, in the first instance an annotated bibliography on the subject of his research. This would be of real value to the student and serve him well in the course of his work. We would, in fact, suggest that in the first instance, a research student should be admitted only provisionally. He should be asked to prepare a bibliography, read widely in his field, attend lectures on methodology and write one or two papers. Only if the department is satisfied, should the admission of the research student be confirmed.

Careful supervision of research is another matter of great importance. While the supervisor need not be an expert on the particular topic selected by a candidate, he should have the competence to guide him in the techniques of research and also be able to evaluate his performance as the work progresses. Cases have come to our notice of professors having to supervise the work of more than 20 research students. Even the practice prevailing in some departments of permitting 8 to 10 candidates to register under one professor is not conducive to efficiency in research.

There should be some unanimity in regard to the evaluation of theses. The usual practice in our universities is to appoint two or three examiners including the internal supervisor and to refer the thesis to another examiner whenever there is a difference of opinion between the original examiners. At the expense of stating the obvious, it is important to ensure that theses are referred only to competent scholars in the field. We understand that this is not always done. While a *viva-voce* test is compulsory in some universities, in a few universities it is given at the examiner's discretion. There are also universities which do not examine candidates by means of a *viva-voce* test. In our opinion the *viva-voce* test has definite advantages, firstly, because it gives the examiners an opportunity to confirm their impressions of the candidate and secondly, it offers the examinee an occasion to defend his position and indicate his knowledge of the field.

Some universities have abolished research degrees lower than Ph.D. viz. M.A./M.Sc. by research. We feel that the provision for an intermediate degree has distinct advantages. First, a number of persons after completing their postgraduate studies enter the teaching profession for whom

some acquaintance with the methods of research would be of great value. Secondly, in the absence of an intermediate degree, the Ph.D. degree itself might deteriorate in quality. We fear that this is already happening in certain subjects like 'languages'. In such cases at least, there is considerable justification for instituting a lower research degree.

A word may also be said about the research activities of teachers. Some of them have done outstanding work and their contributions have won world-wide fame. Many more have published papers in reputed journals. But many teachers are indifferent to the value of research. It is true that a majority of our teachers do not find time, nor a congenial atmosphere for academic work. We have, therefore, to see that each teacher is given some facilities for quiet reading and writing. If a room could be placed at his disposal, where he could apply himself to such work, it would be a great convenience. The habit of reading and writing has to be cultivated not only among the students but also among the teachers. It is not, perhaps, too much to expect from a teacher at least one research or learned paper every year. It may also be desirable for universities to take the research work done by teachers into account at the time of annual increments, confirmation, promotion, etc.

We are happy to note that the University Grants Commission has instituted several schemes for encouraging research work among students and teachers. The Commission's scheme of junior and senior research fellowships has brought into the arena of research a number of promising young scholars and scientists. Its offer of help to teachers for individual research work as well as for the publication of their writings is also praiseworthy. The special importance the Commission attaches to strengthening of central and seminar libraries, provision of research cubicles, travel grants for visiting centres of research, etc. are all oriented in this direction. While these steps, no doubt, are intended to produce in the universities a climate of true devotion to the pursuit of learning and research, unless the teachers themselves are able to appreciate the creative value of academic enquiry, they may be unable to stimulate in the students a sense of intellectual adventure and curiosity without which higher education cannot prosper.

Research in the broad sense stands for the typical outlook of the university as an institution committed to the pursuit of truth and excellence. A university cannot be satisfied with being merely a purveyor of existing knowledge, but must devote a considerable part of its resources and energy to the exploration of new areas and avenues of knowledge and to constantly bringing to light what is hidden or implied in the body of existing knowledge. This commitment of the university has also wider implications. It means that in a university knowledge is not accepted on authority, that it has to be subjected to constant critical review, and that one should be prepared to follow the argument wherever it leads. The following words of Professor Herbert Butterfield of Cambridge, who describes the place of research in a university, particularly of scientific research, are illuminat-

ing.* "It is clear, in any case, that research is one of the important functions of a university; and a good deal of the money that is spent on the universities must be regarded as devoted to research, not merely to the teaching of the young. Most of all it is the function of the university to promote research in the fundamental aspects of the various sciences. We have learnt not to regard the basic things as 'useless', but to value them all the more from the very fact that their ultimate utility is so unpredictable. The university is important precisely because here, most of all, truth can be pursued for its own sake—science pushed forward on impulses that come from the heart of science itself. Universities are better adapted than any other institutions for keeping the course of science free and its development flexible and, here, where so many different kinds of science and of scholarly enquiry are hoarded together, there is more chance of cross-fertilisation, more opportunity for men in different fields to knock sparks off one another. In the realm of ideas the best kind of organisation is the one that is most conducive to elasticity of mind. The evil to be dreaded is the hardening of the arteries."

* Herbert Butterfield: *The Universities and Education Today*—pp. 22-23.

CHAPTER VII

SCIENCE EDUCATION

The history of science education in India has been one of steady growth, though it has not been spectacular. Calcutta University was the first to start the teaching of science with the setting up of a department of chemistry in 1915. Other universities followed. The number of science departments increased rapidly during the decade following independence.

The number of science students in the universities and colleges (including intermediate students) was only 1,27,168 in 1950-51. It increased to 1,97,475 in 1955-56 and 4,34,925 in 1963-64. The proportion of students offering Science subjects to the total enrolment in universities and colleges was 32.1% in 1950-51. It declined to 27.7% in 1955-56. However, the proportion increased during the second and third plan periods. It was 29.3% in 1959-60 and 31.3% in 1963-64.

At the postgraduate and research levels also, there has been an increase in the number of science students. Out of a total of 82,500 students enrolled in postgraduate courses in 1963-64, it is estimated that 19,484 or 23.5% were in science subjects. Of these 2284 or 13.3% were doing research and the remaining students i.e. 17200 or 86.7% were enrolled in M.Sc. courses.*

The pattern of enrolment of postgraduate and research students indicates that the affiliated colleges account for nearly 45% of the total enrolment at the M.Sc. level and nearly half of the postgraduate science departments are located in the affiliated colleges as shown below :

1962-63

		No. of Deptts.			Postgraduate Enrolment (M.Sc.)		
		Univ.	Colleges	Total	Univ.	Colleges	Total
Physics	..	32	40	72	1554	1100	2654
Chemistry, Bio-Chemistry etc.	..	44	65	109	1922	1784	3706
Mathematics and Statistics	..	42	77	119	2330	2304	4634
Botany	..	29	35	64	845	609	1454
Zoology	..	28	32	60	738	722	1460
Geology	..	26	8	34	668	94	762
Other subjects	..	45	22	67	782	217	999
Total	..	246	279	525	8839	6830	15669

* The distribution of M.Sc. enrolment between the university departments and affiliated colleges was in the ratio of 58 : 42 and that of Ph.D. enrolment in the ratio of 87 : 13 in 1963-64. The enrolment figures were as below :

	Universities	Colleges
M.Sc.	10100	7100
Ph.D.	1982	302

The number of postgraduate science departments in affiliated colleges was 254 in 1963-64,

It is interesting to note, in this connection, the percentage distribution of university enrolment according to faculties in certain selected countries, including India, given below :—*

Country	Year	Humanities including Social Sciences	Natural Sciences	Engineering	Medical	Agricultural	Other	Total
1	2	3	4	5	6	7	8	9
1. Argentina	1957	21	4	9	28	2	36	100
2. Brazil	1959	24	4	12	22	3	36	100
3. Canada	1960	51	9	14	8	3	15	100
4. Ceylon	1958	45	11	11	20	1	12	100
5. Egypt	1959	43	5	11	8	9	24	100
6. Federal Republic of Germany	1959	33	13	15	13	2	24	
7. France	1958	26	27	7	18	1	20	100
8. India	1958	62	23	4	3	1	7	100
9. Italy	1959	44	11	12	13	2	18	100
10. Japan	1959	49	4	14	6	4	23	100
11. Mexico	1958	7	2	10	7	—	74	100
12. New Zealand	1958	38	10	6	7	5	34	100
13. Pakistan	1958	61	26	3	5	—	5	100
14. Phillipines	1957	48	1	15	10	4	22	100
15. Sweden	1958	47	13	15	16	2	7	100
16. Switzerland	1959	36	18	13	18	2	13	100
17. Turkey	1958	31	7	11	12	5	34	100
18. United Kingdom	1958	40	24	10	17	2	6	100
19. U.S.S.R.	1959	6	—	34	8	12	40	100
20. Yugoslavia	1958	34	5	16	12	7	27	100

It will be observed from the above table that the proportion of Science students in the Indian universities compares favourably with the situation in a large number of other countries. The countries with a higher percentage are France, Pakistan and the United Kingdom. It is much higher in India than in industrially advanced countries like Germany and Japan. Unfortunately, the same cannot be said about facilities in the professional sector of education.

The scientific policy resolution of the Government of India commits it to the pursuit of the following purposes :

- (i) to foster, promote, and sustain, by all appropriate means the cultivation of science, and scientific research in all its aspects —pure, applied, and educational ;
- (ii) to ensure an adequate supply, within the country, of research scientists of the highest quality, and to recognise their work as an important component of the strength of the nation ;

- (iii) to encourage, and initiate, with all possible speed, programmes for the training of scientific and technical personnel on a scale adequate to fulfil the country's needs in science and education, agriculture and industry, and defence;
- (iv) to ensure that the creative talent of men and women is encouraged and finds full scope in scientific activity;
- (v) to encourage individual initiative for the acquisition and dissemination of knowledge, and for the discovery of new knowledge in an atmosphere of academic freedom ; and
- (vi) in general, to secure for the people of the country all the benefits that can accrue from the acquisition and application of scientific knowledge.

However, resources available to the universities for the development of Science departments have not been commensurate with their requirements. During the Second Plan period the University Grants Commission paid grants totalling Rs. 402 lakhs to the universities for buildings, laboratories, equipment, apparatus, library books and additional staff for scientific studies. The Commission earmarked a sum of Rs. 133 lakhs for the purpose during the Third Plan period; out of this the universities received Rs. 107.37 lakhs during 1962-63, Rs. 149.11 lakhs during 1962-63 and Rs. 152.53 lakhs during 1963-64. Although the provision for scientific education in the universities has increased as indicated above, it cannot be said that it is yet adequate considering the great need that exists to improve standards and to enable Science to play its full part in the development and progress of our country. Science education makes heavier demands than general education in respect of accommodation and equipment. As the teaching of Science necessarily involves practical work in laboratories, the teacher-pupil ratio on the Science side has also to be better. At present, the dearth of qualified Science teachers both at the college and university levels has become so serious in many areas that much of the undergraduate teaching is carried out by teachers with insufficient qualifications and experience. In many places there is also an acute shortage of the equipment, books, etc., required for research. The situation is further aggravated by difficulties of foreign exchange and import.

These factors have unfavourably affected the standards of Science education. Although it seems certain that at the highest levels the quality of scientific teaching in the universities has not declined, and probably has improved, it cannot be said that in the case of a large majority of the students, the instruction given is satisfactory. While eminent foreign observers of the Indian scientific scene have been appreciative of the work being done by many of our scientists and in the universities, they have also been highly critical of some of its features. For example, Dr. Kurt Mendelssohn of the University of Oxford, giving an account of his recent visit to India said, "India has scientists who in quality are second to none. She also has a reserve of capable brains which many a country would envy.

The younger generation of scientists, in particular, impresses one by their love for the subject, their capacity for hard work and, as often as not, by their competence." But he also found that adequate resources were not being placed at the disposal of scientific research and training in India, there being a tendency to treat Science as a luxury rather than an urgent necessity indispensable both for the country's welfare and its security. According to him many younger scientists in India also suffer from, "lack of appreciation of their work; insufficient means for research; difficulties in obtaining equipment; and, last but not least, pettiness and jealousy among colleagues particularly the older ones."*

A careful study of the scientific standards has been made by the Department of Atomic Energy based on its experience of training programmes, scholarships, research grants, fellowships and refresher courses for university teachers offered under its auspices. The conclusions of this study are revealing. The department has a provision for 300 trainees in physics, chemistry, engineering and metallurgy for a one-year course which carries a stipend of Rs. 300/- per month and excellent prospects of employment in the department and allied institutions. The number of applications has averaged more than 3000 per year from 1st class degree candidates and from 1st and 2nd class M.Sc.'s. Although the number of applicants has increased since the year 1957, when the scheme was initiated and is now over 4000, it has not been possible to get the requisite number of 300 trainees a year. In 1962-63 only 207 applicants were found suitable out of 3835. The careful record kept shows that "the proportion of candidates suitable for training has steadily gone down and the proportion of applicants of very poor quality has steadily gone up, although the standard of requirements in the selection has certainly not risen. There does not seem to be very much difference between a B.Sc. and an M.Sc. student and there is some indication in recent years to show that the 3-year B.Sc. course produces students of lesser calibre than the original system. In any case experimental work done by these students prior to coming to the training school seems to be extremely weak. The possible reasons for declining standards of Science teaching in most cases are attributed to the poor quality of the teachers, the dominance of the purely memory examination and the extremely outmoded syllabi. Practical examinations in their present form in universities have absolutely no value." We do not necessarily endorse all these findings, but they must carry weight as coming from knowledgeable quarters.

We are convinced that great attention should be given to raising the quality of Science education. It has to be recognised that the standards of Science education at the university level cannot be improved without building a sound structure of Science teaching in the schools. Most of the potential scientists of the next 20 or 30 years are still in schools. It is,

* Science in India, talk by Dr. Kurt Mendelssohn FRS on the Third Programme of the BBC, published in the Listener dated September 24, 1964.

therefore, a matter of considerable importance that they are taught the basic principles of Science through first rate teachers and good textbooks written by top scientists in the universities. Science teaching in the universities cannot be revolutionised unless a new orientation is given to its teaching in the high schools and higher secondary schools.

An important lead in this direction has been given by the University Grants Commission by organising summer institutes for secondary school teachers in Science subjects in collaboration with the United States Agency for International Development and the National Council of Educational Research and Training. Four such institutes in physics, chemistry, biology and mathematics were organised during the summer of 1963 with the main object of establishing channels of communication between the schools and universities. During the summer of 1964, 16 summer institutes were conducted, 4 in each region of the country. We welcome such programmes and hope that they would be continued with greater vigour and their scope enlarged to include more university and school teachers.

We have also to see that students with scientific potentialities are identified sufficiently early and given special attention and care. We welcome in this connection the "Science Talent Search" scheme of the Government of India and suggest that its scope may be enlarged so as to include a wider category of young students who may be encouraged to take up the study of Science. The problem of selecting students for Science courses in the universities is also important. The emphasis in their case should not be so much on verbal aptitude as on mathematical ability and capacity to do practical laboratory work. It is perhaps easier in the case of Science students to devise and apply objective and reliable methods of evaluation for judging their suitability to undertake university courses.

The rapid growth of Science calls for energetic action on our part. One of the immediate requirements in this connection is to bring the courses of study up-to-date. It is essential to abandon the common notion that teaching must necessarily be provided in a historical order. At present many of our graduates do not have sufficient knowledge of the contemporary advances in their subjects. A recent survey of the physics (honours) students in one of the universities in India revealed that 75% of the material taught to them was exclusively concerned with 19th century physics and the remaining portion with the physics of the first two decades of the present century. It was found that they could easily obtain 1st class marks without any knowledge of nuclear physics or electronics both of which are vital for a serious understanding of modern physics. A similar view has also been put forward by Dr. D.C. Pavate in a recent convocation address.* He said: "Whenever I go abroad, I make it a point to meet our students and the professors under whom they work. The students invariably complain against outmoded courses of study in their

* Convocation Address at the Marathwada University on October 14, 1964.

home universities and the consequent handicaps from which they suffer abroad. They say that their 1st class Master's degree in any of the Science subjects at home is of little avail in Western universities. It is true that some of our students have achieved great distinction in physics, chemistry, mathematics and biological Sciences in Europe and America, but, by and large, they have to struggle hard owing to their inadequate foundation at home..... Broadly speaking, our Master's degree course falls far short of the requirements of the Honours and Bachelor's degree in Great Britain and Canada. In addition the syllabus in physics, engineering and mathematics in many of our universities is at least 25 years behind the western requirements."

In an earlier chapter of the report, we have referred to the appointment by the University Grants Commission of a number of 'Review Committees' to examine the existing syllabi for the undergraduate and postgraduate courses.* The Science committees have clearly stated that the curricula and courses in our universities and colleges have not evolved at a pace commensurate with the rapid growth of scientific knowledge characteristic of the present century. Contemporary Science is a dynamic enterprise that flourishes because new questions are asked and new leads sought in experimentation. The introduction of new courses of study in Science will no doubt require additional facilities to be provided by way of laboratory space, equipment, special aids to teaching new processes, examination reform and efficient planning. Above all, if efficient change-over is to be made possible, the teacher has to be given a central place in the scheme, as neither good equipment nor excellent facilities will result in effective use of the laboratory if he does not have an adequate understanding of contemporary Science.

Along with frequent revision of the courses of study, it is desirable to provide more diversity in the selection of subjects by a student at the undergraduate and postgraduate levels. The present combination of subjects has become very stereotyped. The recent advances in bio-physics and bio-chemistry have shown that closer relationship between the biological Sciences on the one hand and physics and chemistry on the other can yield fruitful results. We repeat that there should not only be communication between one Science and another but also between Sciences and Humanities. In a world which is so much concerned with and governed by the progress of Science, even specialists in the Humanities should be given some insight into the nature, purpose and treatment of Science. Similarly, Science students should be given opportunities to get acquainted with the world of values. It may be mentioned in this connection that the German universities have retained to the present day the study of philosophy as a compulsory requirement for all students. While specialisation undoubtedly demands a high degree of concentration in a particular field, a provision of this kind will widen the mental horizon of students.

It is also necessary to impart a fresh outlook to techniques of teaching Science in our universities and colleges. For example, students should not be permitted to perform the routine experiments in a routine way. There is nothing more deadly than a list of experiments which bears little relation to modern scientific techniques. We must introduce more freedom into Science classes and stop driving students through a prescribed set of mechanical movements. Universities should also encourage students to build up their own apparatus and to improvise methods of their own to develop far greater skill and insight into practical work. This can come about when students are allowed "to play" with the tools and can develop what may be called "the craft of experimental physics." It is also necessary to guard against the danger of building up big apparatus at places where qualified and trained people are not available to handle them. We understand that in some departments very little work has been done in spite of costly equipment. We need hardly add that in such cases immediate steps should be taken to transfer the equipment to the departments where it can be used more effectively.

The importance of scientific research in the context of the multifarious schemes of development of our country at the present time cannot be too much stressed. If it is indispensable in the developed economies, it should be considered paramount in a developing economy like ours. Investment in research brings about an increase in the level of productivity and national prosperity as brought out in the following table, which shows that, generally speaking, the higher the expenditure on research development, the higher is the gross national product of a country.*

Country	Expenditure on research and development (1960)		Consumption of commercially produced energy per capita (1960) (tonnes equivalent coal)	GNP Dollars per capita
	per cent of GNP	Dollars per capita		
U.S.A.	2.8	78.4	8.0	2308.0
U.S.S.R.	2.3	36.4	2.9	—
U.K. (1961)	2.7	35.4	4.9	1146.0
France	2.1	27.0	2.5	1026.0
Sweden	1.6	27.0	3.5	—
Canada	1.2	21.9	5.6	1408.0
W. Germany	1.6	20.0	3.6	1115.0

* Reproduced from the Convocation Address delivered by Dr. D.S. Kothari at the Jadavpur University on 4th January, 1965.

Switzerland	..	1.3	20.0	1.9	1463.0
Netherlands	..	1.4	13.5	2.8	859.0
Norway	..	0.7	10.0	2.7	—
Luxemburg	..	0.7	9.3	—	—
New Zealand	..	0.6	8.9	2.0	1317.0
Belgium	..	0.6	7.5	4.1	1030.0
Japan	..	1.6	6.2	1.3	404.0
Hungary	..	1.2	—	2.5	—
Poland	..	0.9	5.3	3.2	—
Australia	..	0.6	5.3	2.2	1239.0
Italy	..	0.3	1.8	1.2	623.0
Yugoslavia	..	0.7	1.4	0.9	223.0
China	..	—	0.6	0.6	—
Ghana	..	0.2	0.4	0.1	198.0
Lebanon	..	0.1	0.3	0.7	—
Egypt	..	—	0.3	0.3	138.0
Philippines	..	0.1	0.3	0.2	200.0
India	..	0.1	0.1	0.1	69.0
Pakistan	..	0.1	0.1	0.1	54.0

Steps have already been taken by the Government of India to encourage scientific research and investigations by bringing into being the Council of Scientific & Industrial Research and setting up under its auspices a large number of National Laboratories. A special branch of Science—nuclear physics—has been given a name and habitation of its own. Mention may also be made of the Tata Institute of Fundamental Research, Bombay which was established in 1945 and has since been recognised by the Government of India as a centre for advanced study and research in nuclear physics and mathematics. There are also a number of other agencies like the Geological Survey of India, the Geographical Survey of India, the Botanical Survey of India etc. which are carrying out intensive studies in their respective fields. It is, nevertheless, necessary to emphasise that while the above institutions may be concerned with particular areas of research, universities should be free to take up any work of their choice.

The convention that applied research be the exclusive concern of non-university institutions needs reconsideration. It is also difficult to draw a clear line between pure and applied research. In fact universities have to cast their net over a wide area of research of both theoretical value and practical utility. Universities in developing countries like India have to take up a number of research projects with an intimate bearing on planning and growth.

It is doubtful whether universities have many first rate centres of research, though it is true that a number of them have been able to bring

into being departments of great promise and even eminence. Some of them have already been recognised by the University Grants Commission as centres of advanced study.

What is, however, disturbing is the fact that such places are far too few, considering the expansive situation of the universities. Several factors seem responsible for this. Apart from the difficulties earlier referred to, namely lack of financial resources including adequate foreign exchange, laboratory facilities, books etc., there is also a shortage of well qualified personnel. It is in this context that we have to regret our inability to attract to the universities reputed Indian scientists, who are employed in foreign countries. Even a highly developed country like the United Kingdom is faced with the problem of migration of scientists to the United States of America where facilities for scientific research seem abundant. In India this problem had at one time become quite acute, but the creation of a pool by the Council of Scientific Research and offer of suitable conditions of service and opportunities of work for such scientists, appear to have improved the position to some extent. It is, however, necessary to ensure that they do not lose interest in remaining in India by taking care to maintain congenial conditions. Perhaps one reason for the present state of affairs is the tendency to 'officialise' Science in some quarters. It cannot be too much emphasized that scientific work cannot be done to order.

Elsewhere in the report* we have drawn attention to the need to have similar conditions of work and programmes in the university sector and the non-university sector represented. It would be of great advantage to the progress of scientific research in the country if ways of bringing about fruitful co-ordination and co-operation between the two could be worked out. Since our resources and personnel are limited, unless they are utilised most advantageously, it will be impossible to obtain the best results. It will also be necessary to bring to our universities a number of distinguished research scholars from the national laboratories and other scientific institutions so that the student population may have the benefit of direct contacts with them. It will not also be difficult to arrange for guidance of research of university students in the National Laboratories. In other words, we envisage a programme of close co-operation and interaction between the two sectors. Unfortunately there seems to be a tendency to plough lonely furrows in the scientific field. We need hardly add that constant exchange of ideas and consultation would contribute towards maximum utilization of existing facilities. We also commend to the universities exploration of the possibilities of undertaking research projects on a co-operative basis, the different parts of the project being assigned to departments in different universities dealing with similar fields of study.

It is important to recognise the international aspects of Science and to explore the possibilities of fruitful collaboration between Indian

universities and universities abroad. Since most of the developing countries lack the necessary resources to establish educational and training institutions on a sound footing, especially in highly specialised fields, it is a matter of considerable importance that there should be a constant import, visible as well as invisible, of scientific knowledge from more advanced countries. International co-operation in Science education and research could be achieved in many ways, through scientific documentation, international studies and liaison service, dissemination of information on current research work and technical assistance programmes. At the level of higher scientific and technical education, the co-operation could take the shape of making available the services of experts in specialised areas of study and in inter-disciplinary subjects which have assumed great importance in contemporary Science education. The three major facets of technical co-operation available through such foreign aid programmes as UNESCO, TCM, USAID, Indo-French Co-operation etc., are (i) the availability of expert services, (ii) facilities for training of personnel in well-known laboratories in other countries and (iii) supply of essential scientific equipment to tone up the general level of scientific education. There are also programmes such, as the Commonwealth Educational Co-operation Programme, Teachers Training Bursaries, exchange of visits by younger scientists, participation in scientific conferences etc., which play an important role in bringing about closer collaboration in Science education and research. These programmes need to be expanded, particularly at the level of research.

One thing more. Science education in India is being impoverished by talented students being attracted to professional courses such as medicine, engineering and technology or to jobs which do not require a high degree of academic competence. This is largely due to the high salaries and better prospects offered by them. It will, therefore, be necessary to impress upon our promising young people in the universities that Science offers attractive rewards, particularly in the developing situation in India. Dissemination of information about scientific careers and opportunities will be one concrete measure that can be taken in this connection.

CHAPTER VIII

IMPROVEMENT OF TEACHING

It is widely recognised that the conditions in which teaching and learning are carried on in our universities and colleges are unsatisfactory. The unprecedented growth in numbers which we are witnessing in our time has not only rendered physical facilities such as class rooms, libraries and laboratories grossly inadequate but has also made it impossible for teachers to pay sufficient attention to students. This is clearly brought out by the following facts and figures. We had in 1963-64, 60,031 teachers of whom 10,439 were in the university departments and the rest in the affiliated colleges. Including tutors and demonstrators, the total staff strength was 68,634, which for a student population of 1.2 million,* gives a teacher-pupil ratio of 1:17.3. It is only in a very small number of universities that the teacher pupil ratio can be described as fairly satisfactory as shown by the following table**

Category	Staff-student ratio	No. of universities in the category.
A	Better than 1 : 10	4
B	Between 1 : 10 & 1 : 20	33
C	Worse than 1 : 20	17

Conditions in colleges are worse. In as many as 653 colleges out of 1,671 for which information is available the teacher-pupil ratio is worse than 1:20. A large number of big colleges have come into existence which function in several shifts in a factory-like environment. In 1962-63, there were 39 colleges with an enrolment of 2000 or more. In the city of Calcutta alone there are 7 such colleges. In a survey undertaken in 1958-59 it was revealed that nearly 54,000 out of a total of 71,500 students in Arts, Science and Commerce were enrolled in these colleges.*** The following teacher-pupil ratio in certain selected countries would reveal that while the overall position in India is not as satisfactory as in U.K. and U.S.A., it is better than the teacher-pupil ratio in such countries as France and Germany.****

Staff Student Ratios 1960

	<i>Ratio</i>
Great Britain	1:8
France	1:30
Germany (F.R.)	1:35

*Excluding Intermediate Boards.

**Figures relate to the year 1962-63.

***Report of the U.G.C. Committee on Big Colleges in the City of Calcutta.

****Report of the Committee on Higher Education. p. 41.

Netherlands	1 : 14
Sweden	1 : 12
U.S.A.	1 : 13
U.S.S.R.	1 : 12

No doubt, deficiencies will have to be rectified by increasing the number of teachers for making personal contact possible and by providing more congenial conditions for both teachers and students. But an improvement of the standards of teaching implies much more than mere enhancement of facilities. It has to be understood that the root cause of our inability to educate is that teaching is forced into the mould of the examination. Our efforts are mostly directed towards "covering the syllabus" for preparing students for the final examination. Even this limited objective is not fulfilled as reflected by the overwhelming number of 'failures' at public examinations.

In our tours and meetings with teachers and students, we gained the impression that the teachers' business is generally conceived as giving a certain number of lectures. There seems to be very little attempt to involve the student in the learning process through direct contact with the mind of the teacher, teaching being confined almost entirely to the mechanical process of transmitting information. Under the lecture method, the students are expected to listen and to take down notes while the teacher talks on his theme. As someone has said, this method amounts to the delivery of a complete textbook in the course of year. Lecturing has, no doubt, the advantage of presenting to the student a comprehensive and unified view of the subject matter. Some teachers, especially those who prepare their lectures carefully and have fluency of expression, can create a profound impression on the mind of the student. The real difficulty arises when lecturing is not supplemented by other recognised methods of instruction. This happens particularly in colleges which do not have sufficient resources at their disposal.

Some teachers go to the extent of dictating full length lecture notes. An obvious disadvantage of note dictation is that students are tempted to reproduce the material in the examination. They also develop a tendency to rely on cheap notes and cram books and are never brought under the influence of the best writing on the subject. While dictation of notes is clearly undesirable, it will be useful if the teacher prepares a synopsis of his lectures containing carefully selected bibliography. These should be supplied to students in good time to enable them to go through the material and thus have a better grasp of the lecture at the time of its delivery.

Students sit through lectures as passive listeners and in most classes there is no discussion worth the name. Why is it that students do not put searching questions to their teachers? Is it due to lack of interest on

their part or to the indifferent attitude of the teachers? Perhaps, the reason is that students have not been trained to think independently or critically. They have to be provoked to take part in discussions of an academic kind. The teachers can play an important part in this by setting apart some time at the end of a lecture for questions to be put by students. Out of three quarters of an hour or one hour provided for lecture periods, it should be possible to assign at least 15 minutes for questions and answers. This would reveal to the teacher how far the student has been able to follow the lecture and whether he has been reading the suggested books and journals or not. It would also make teachers do more work. They would try to keep themselves up-to-date by constant reading in order to face the class with confidence. Teaching and examinations should get away from stuffing the memory and testing the memory, Critical study, problem solving, application of principles to concrete situations—these should be substituted. Discussions should be encouraged.

On the basis of data available to them, some of the Review Committees appointed by the University Grants Commission found that a large proportion of our student population, which is sometimes as high as 70 per cent, does not make sufficient and adequate use of the available library facilities. We also learnt in the course of our meetings with the students of various universities that most of them work only for the last three or four months before the final examination. One student was bold enough to say that with this much of application, he got a first class in his law examination. The problem is how to change this attitude of indifference towards studies. At the university stage, a student should be encouraged to go to the library, select books and read for himself. The only practical method which suggests itself is to insist upon more written assignments and tutorials during the course of the year. It cannot be too strongly emphasized that one of the important measures that we can take to improve the quality of our education is to make the students work regularly from week to week on given assignments. It would not be an exaggeration to say that this is at present the exception rather than the rule.

It is perhaps more true of the Arts students that they do not work regularly. The Science man works in the laboratory, the technology man in the workshop, drawing class and practicals, the medical man in the hospital etc. It has not been possible on the Arts side to give practical tests because there are not enough teachers or tutors to assess their work. It may, therefore, be necessary to devise tests which can be evaluated by the students themselves. They should also be encouraged to write a few essays in the course of the year. These, we feel, will go a long way to improve standards of achievement.

There is a common belief among students and teachers that 'finishing' the syllabus is essential. This is often achieved at a high cost. A student is not encouraged to think for himself, to question what he is told, or to browse outside the syllabus. It is of the utmost importance that the gene-

rally prevailing idea that a lecturer should cover a syllabus must be given up. There is also room for a syllabus to be broken up into parts, each of which could be handled by different lecturers instead of a whole subject being entrusted, as at present, to a single lecturer. This will have the advantage of determining in advance the number of lectures needed for each part. Such a division could also serve more than one course and has the additional advantage of avoiding duplication of lectures for different courses. If a part of the syllabus is not covered by lectures, it should not be regarded as a serious defect because students should be trained to read for themselves in addition to listening to lectures.

If it is true that "the justification for a university is that it preserves the connection between knowledge and the zest of life, by uniting the young and old in the imaginative consideration of learning", as pointed out by A.N. Whitehead,* it is evident that no definite progress can be achieved in the field of higher education until it is understood that the heart of the educational process consists in the quickening of the mind of the student by the mind of the teacher. Until concrete steps are taken to make such a meeting of minds possible between the young and the old; the work that goes on in our universities could at best be described as a mechanical activity and teachers in such a set up as technicians.

The function of tutorials in this context cannot be over-estimated. It may not be possible for our universities and colleges, handicapped as they are with shortages of various kinds in respect of good teachers, library facilities etc., to make tutorial arrangements as exist in Oxford and Cambridge. But the idea behind them viz. that a living contact has to be established between the mind of the student in his formative years with that of good teachers cannot be over-stressed. This idea, in fact, has been a recurring theme in all great writings on education. It has also been the accepted system of educational institutions from the time of the Greek Academies and the Gurukuls in our own country to the best universities of modern times. The value and significance of an active relationship between teacher and student cannot therefore be a matter of debate. If our universities and colleges are unable to bring it about, it is not surprising if standards are adversely affected.

It will be desirable to set apart a certain number of tutorials in each subject and to give a good deal of the instruction that is now given in the form of lectures through them. The students, because of the small size of the class, could also be encouraged to ask questions and to enter into discussions. With the reduction in the number of lectures, students would have further the time to put in two or three hours of reading for every lecture delivered. This reading should be tested and assimilated through tutorials. The tutorial should not be allowed to become a lecture class by the habit of some lecturers not giving the student a chance of talking.

* A.N. Whitehead: *The Aims of Education* p. 139.

Apart from encouraging discussions between the teachers and students, tutorials should also have an important place for writing. In order that the students may benefit by this exercise, the essays written will have to be corrected and evaluated. Here, one of the complaints is that teachers do not find time to do so. We feel that by a judicious combination of correction by teachers and self-correcting exercises or objective type of tests, it should be possible to undertake this programme.

Although it is true that lectures are successfully delivered to very large classes, it is a fact that the average teacher can teach better a class of, say, 100 than a class of 150. It is however important to keep the size of the tutorial small. The present position in this regard is highly unsatisfactory in some universities, e.g. at Annamalai the size of tutorials for pre-university and undergraduate students is as large as 50. There are a number of universities where tutorial classes consist of 25 to 30 students. The real tutorial is one in which the student presents some written work, the fruit of his own study and reading based on a previous assignment. In such tutorials the number can only be 3 or 4 at most, but it is one of the most valuable and effective methods of education. Such tutorials should be employed wherever possible, but in our situation we have to recognize that the approach to individual attention will have to be through somewhat large 'tutorial groups', which may extend to 10 or 15. Even so it should not be simply a revision class. It is essential that some initiative comes from the students in the way of preparatory work and writing.

The main obstacle in providing tutorials of a reasonable size is the inadequate number of teachers. If 80 or 100 students are taken in a lecture class, only one large class room and only one lecturer is required. If they are divided into 5 tutorial groups, 5 class rooms and 5 lecturers would be required. Only a few colleges have been able to get over this difficulty. But if the tutorial work is carefully organized, even with the limited staff available, every student could be given at least one tutorial per week. This certainly will not be possible for every subject. The tutorials therefore will have to come by rotation in different weeks for different subjects.

At the postgraduate level, tutorials will have to be supplemented by seminars. The postgraduate student has already got some practice in writing; he should, therefore, be encouraged to do independent thinking. We have to involve him in group discussions which can best be done by arranging seminars. The seminars need not be confined to students of a particular discipline. It would help students in developing a wider perspective of their subject of study if teachers and students from related disciplines are also occasionally invited to participate in them. Students may read papers and this may be followed by a discussion on the subject of the paper, in which both students and teachers may take part.

Another shortcoming of our present method of instruction is that we assume the educational calibre of all students to be the same, with the

result that weak students find it difficult to keep pace with the work while the better students do not feel sufficiently interested. Since there are wide differences in the abilities of students, if all of them are put in the same mill, they become a middling lot. The best students are not given the necessary encouragement to go forward, on to the higher levels of scholarship. We keep them down to the level of the average students whose success in the examination seems to be the *summum bonum* of the teachers' responsibilities. Could we not select the more promising students, give them better facilities in the laboratory and library, and try to push them up ? This experiment is worth trying in our universities and certainly until such time as the screening of students before admission is widely accepted, it has great value.

More important than the methods of teaching is the role of the teachers. Teaching cannot be improved without able teachers. For improving the quality of education, we have to find teachers who have not only a thorough grasp of the subject matter but also a genuine interest in youth and an understanding of psychology. The most critical problem facing the universities today is the dwindling supply of good teachers. It is not an easy thing to produce competent and devoted teachers in sufficient numbers. The report of the Committee on Postgraduate Engineering Education and Research published in August 1961 refers to the disconcerting fact that in the engineering colleges, "the shortage (of staff) at present is of the order of 40-50 per cent of the sanctioned strength in the institutions. It is also becoming increasingly difficult to attract persons of high calibre to the teaching profession. These difficulties will be felt even to a greater extent as further expansion of technical education is undertaken in the Third Five Year Plan. The committee wishes to emphasise that unless the problem of staff is adequately solved, it will be futile and even dangerous to expand technical education any further". These remarks apply with equal aptness to institutions for Arts and Science subjects also.

In any society the number of people with high ability is necessarily limited but they are in great demand for positions in different fields such as administration, business, industry and the professions. No one expects that all these people will be drawn into teaching. But we have to ensure that the universities are able to attract and retain a reasonable proportion of the talented group. It is in this context that the question of salaries becomes important. In the absence of parity between the salaries offered by the universities and the salaries prevailing in other competitive sectors, a migration of talent takes place from teaching to more lucrative jobs. This process has been going on for a long time in the country and it has not been arrested even today as revealed by the information made available to us by the universities (Appendix 35.)

Fortunately, the salaries of university teachers have to some extent improved in recent years. As many as 33 universities have accepted the Third Plan scales of pay prescribed by the University Grants Commission.

Under this scheme, the salary of the university professor is Rs. 1000-1500, reader Rs. 700-1100 and lecturer Rs. 400-800. The Commission shares the additional expenditure on account of salary revision to the extent of 80%. The main problem now is to make the salaries paid in the universities comparable with those in the National Laboratories, Institutes of Technology etc., which at present are higher. It is understood that the University Grants Commission has recommended approval of this measure 'in principle'. We hope that the Government would make the required funds available to the Commission for bringing about this reform in the Fourth Plan. It should also be understood that no further revision of salaries in the allied sectors would take place or would be permitted without due consultation taking place with the University Grants Commission, as otherwise the salaries in the universities would constantly have to chase the salaries offered by the other institutions and the exodus of teachers from the universities is not likely to be halted.

The problem of the salaries of college teachers is more acute. While 461 colleges have so far accepted the Second Plan scheme of the University Grants Commission for revision of the salary scales of their teachers in accordance with the Second Plan scales of pay recommended by the Commission, viz. principal Rs. 600-800, head of department Rs. 400-700, senior lecturer Rs. 300-600 and Lecturer Rs. 200-500 and received assistance at 50% for this purpose, most of the remaining colleges still have lower pay scales. Even the revised scales, it can be seen, are insufficient in the present economic situation. It may also be noted that in the case of both the universities and the affiliated colleges, State Governments have to give an assurance to the Commission that the revised scales would be continued after the assistance given by the Commission for a period of 5 years ceases. We are of the view that the first priority on the part of the State Governments in the matter of financing universities and colleges should be to regard these scales of pay as committed expenditure. We also fully endorse the following recommendations of the committee appointed by the University Grants Commission to examine the question of revision of salaries of teachers in the affiliated and constituent colleges :*

- (i) There is an urgent need to bridge the existing gap between the scales of pay of teachers in the affiliated colleges and those obtaining in the university departments. In the interests of maintenance of high standards of instruction in the colleges, it is of the utmost importance that affiliated colleges are able to recruit adequately qualified teachers and retain their services. With this aim in view and having regard to the existing salary structure in the colleges, the following scales of pay may be given for different categories of college

* It will be necessary to review the scales of pay from time to time keeping in view the rising cost of living.

teachers :—

Principal	..	Rs. 700-40-1100
Sr. Lecturer	..	Rs. 500-30-800
Lecturer	..	Rs. 300-20-600

- (ii) The number of senior teachers in the grade of Rs. 500-800 in a college should not normally exceed 50% of the total teaching staff of the college. In addition to these senior lecturers the university may appoint one or two senior teachers in the reader's grade (Rs. 700-1100) if the colleges are participating in postgraduate teaching on a co-operative basis.

There is also an urgent need for improving the conditions of service of teachers in the universities and the affiliated colleges. We would like to stress the need to make the rules for provident fund or pension benefits, health services etc., as attractive as those prevailing in the administrative and other services, so that those who like to join the academic profession, and possess the necessary ability and training to do so, may freely move towards it. As matters are, many who might have joined the academic profession go to other areas of work because of the better salaries and service conditions offered by them.

The provision of residential accommodation to teachers is also a matter of great importance. As is well-known, there is an acute shortage of housing in the country, particularly in the big cities and urban areas. Teachers have to pay exorbitant rents for accommodation with a reasonable amount of comfort. In the crowded localities and cramped houses where they are forced to live, there are no opportunities for quiet study. Some universities provide residential accommodation to their teachers, but it is estimated that staff quarters are at present available only to about 20% of the teaching staff (Appendix 24). The provision of staff houses and the prospects of a healthy corporate life which it offers will be an added attraction to the young talented person who wishes to join the teaching profession. The residence of teachers on the campus will also bring into being a truly academic community wherein close personal contacts between the teachers and the taught can grow and bear fruit. If it is not possible to earmark large funds for the purpose, one way of augmenting the provision of staff quarters would be to give loans to teachers on easy terms for building houses near the university campus.

We would also welcome a specific provision for study leave or what is called 'sabbatical leave' for teachers in our universities. This would enable teachers to take a year or so from routine work and devote it to study and research. The leave could also be utilized for writing books and monographs or for undertaking specific research projects. The practice of granting sabbatical leave to teachers is quite common in the U.K., and the U.S.A. It has, however, to be noted that sabbatical leave is not intended for recreational activities but for professional work and the leave for this

purpose must be confined to deserving cases only. We understand that a proposal for introducing sabbatical leave is already under the consideration of the University Grants Commission. We hope that it would be possible to introduce the scheme in the universities and colleges in the near future.

It is not enough to upgrade salaries and to improve the conditions of service of the teachers. We have also to ensure that the right persons are appointed to teaching jobs. Generally speaking, universities are free to appoint their staff and have in most cases a provision for properly constituted committees to help them in selecting teachers (Appendix 19). But there have been three serious departures from this sound principle in recent times, viz., (1) in U.P., the U.P. Government has issued an order laying down the qualifications of teachers of different categories; (2) in Bihar, the State Public Service Commission has been given the responsibility of selection of teachers in the State Universities, and (3) the Government of Madhya Pradesh through an ordinance dated 24th September, 1964 has entrusted the work of selection of various categories of teachers to the State Public Service Commission. We are of the view that it is a necessary part of the universities' autonomy that they should have the right to appoint their teachers. It is, however, expected that the authorities concerned will act with a high sense of responsibility in this matter and will eschew parochial considerations of any kind.

Most universities have laid down the minimum qualifications for the appointment of teachers (Appendix 15). Lecturers are generally required to have a first or second class Master's degree, readers some research experience or teaching experience or published work in addition to a good academic background and professors high academic qualifications with 5 to 10 years of teaching experience, ability to guide and conduct research and reputation for scholarship. It is true that rules cannot be applied in a rigid way. But, on the whole, it would be a distinct advantage to have fairly well defined rules for the guidance of selection committees. In the case of the affiliated colleges, the right to make appointments generally vests with the management. One notable exception is Bihar where there is a university committee which makes appointments to colleges. For various reasons we feel that it would be a distinct advantage to appoint one or two experts from the university on the selection committees of the colleges.

A suggestion which has been put forward in recent years is that university teachers should have some orientation in the technique of teaching. Following the traditions in some of the western countries, the present practice in our country is that while school teachers are required to have taken some training in pedagogy, in the case of a college or university lecturer it is normally regarded as sufficient that he has taken the necessary academic degree. Recent thinking on this question in some countries is in favour of university teachers also being introduced to the methodology

of teaching. In its absence, it is said that the new teacher will have to train himself by a process of trial and error which may take time and create difficulties in the initial stages. It is asked : 'why should young men be given no preparation for the difficult work of university lecturing?.' In Truscott's language "there seems to be no answer to these questions except that universities are amateurish bodies which have never faced up to certain elementary facts". We are generally in agreement with the view that the quality of university education cannot be improved without educating the teachers.

There are two problems to which we must find an immediate solution. First, it has to be recognised that we have in our universities and colleges a number of teachers who are not quite fitted by their accomplishments for efficient teaching. Secondly, for some time to come in view of the expanding requirements of various sectors of national development, universities and colleges may have to be satisfied with persons of less than outstanding ability. If indifferent teachers produce students of only indifferent quality, we have to see that indifferent teachers do not persist in their indifference. We should therefore give these teachers all possible opportunities to improve their competence. In other words, proper education of its teachers must be recognized by the university as one of its urgent tasks.

We envisage a system where new teachers will be given orientation courses and other teachers would be frequently brought together for refresher courses, summer schools, seminars, etc. The main aim of the refresher course will be to give teachers a better understanding of the basic concepts and to strengthen mastery of their subject. No doubt, all of them have already studied the subject, but in many cases circumstances have conspired to keep them ignorant of modern developments. The refresher course offers an opportunity to such teachers to bring their knowledge up-to-date as well as to make rewarding contacts with outstanding scholars and scientists in their field. It is thus expected to provide supplementary training to the teachers in order to familiarise them with the latest advances and for stimulating their interest through meetings with eminent persons in the areas of their study. Seminars on the other hand aim at strengthening their research interests and encouraging searching enquiries in respect of courses and curricula. Equally important is the orientation course for the new-comers. Much frustration and incompetence on their part could be avoided if the university will organise for all such teachers, at a central place, a one-month or two-months course for the purpose of introducing them to the right techniques of lecturing, conducting tutorials, preparing notes, reading etc. We also feel that a greater interest on the part of experienced and senior teachers in the junior teachers is necessary, apart from the remedies suggested. There is certainly no substitute for the catalytic influence that the former can bring to bear upon the latter. Many potentially promising careers have been blighted by initial set-backs and lost to the university world in the absence of such training.

Many of the measures of improvement suggested, it is clear, depend for their implementation on the availability of sufficient number of able teachers. In the circumstances facing the country it is, however, doubtful whether the mounting pressure of students could be met by requisite expansion of the teaching staff. We should therefore like to recommend an increasing use of audio-visual aids such as teaching machines, televisions, radio, films, tape-recorders and so on which are being used with great success in different parts of the world. We do not envisage a large scale mechanisation of teaching as no audio-visual aid can replace able teachers. Our search for them will have to continue, but even if our efforts in this direction are rewarded, there will be sufficient scope for the utilization of audio-visual apparatus. Even in U.K. where the teacher pupil ratio is 1 : 8 and U.S.A. where it is 1 : 13, their use is widespread. This is due to the fact that such media help the university community to have 'contacts' with master minds which in any country, however advanced it might be, are limited. It is also possible to bring into service films, tapes, records etc. to assist the teacher himself in his work—to supplement and strengthen—his teaching by 'sight and sound'. Apart from using them in the regular classes conducted by educational institutions, their use will be beneficial for "correspondence students" whose numbers in India are likely to increase rapidly in days to come. Unfortunately, universities and colleges in India are not fully alive or even aware of the significant progress that has been made in this field. It would therefore be necessary for a central agency like the University Grants Commission to collect and communicate information about various teaching aids to the universities and colleges. It would even be desirable for the Commission to organize regular exhibitions of such equipment in the universities.

CHAPTER IX

MEDIUM OF INSTRUCTION

The problem of the medium of instruction for different stages of education has engaged much attention and provoked a good deal of controversy in recent years. Several commissions and committees viz., the Wardha Committee or the Zakir Hussain Committee (1937), the Committee on the Medium of Instruction at the university stage set up by the Ministry of Education under the chairmanship of Dr. Tara Chand (1948), the University Education Commission (1948-49), the Language Commission (1956), the Kunzru Committee appointed by the University Grants Commission (1957), the Working Group appointed by the University Grants Commission (1959), the Chief Minister's Conference (1961), the National Integration Conference (1961), the National Integration Council (1962) and the Vice-Chancellors' Conference (1962) have considered various aspects of the problem. Of these, the report of the U.G.C. Working Group and the proceedings of the National Integration Council deserve special mention.

The Working Group which examined the problems relating to changes in the medium of instruction in Indian universities found the following situation :-

(a) Some universities were changing the medium of instruction to the local language. In several universities, students were permitted to answer examination papers in the local language.

(b) One or two universities were considering changing over to Hindi even though it was not the regional language.

(c) In some universities, the change of medium had been brought about without adequate preparation.

(d) In many cases the standard of English had been allowed to deteriorate.

The report of the Working Group stressed the need for improvement in the standard of English in the universities even when the medium of instruction is changed to an Indian language. It suggested that for technical subjects at least it might be advantageous to retain English as the medium for some time to come. The Group also suggested that equality of opportunity being one of the most important considerations for all-India competitive examinations, English should continue to be the medium for these examinations or all the languages of India and English should be permitted to be used as media. The report further drew attention to the importance of inter-university communication all over the country and suggested that for some time to come at least such communication should be through English.

The National Integration Council re-affirmed the conclusions set out in the statement issued by the National Integration Conference in October, 1961 to the effect that the regional languages were bound to replace English as the medium of instruction and that in such a situation there would be need for a link language which ultimately could be Hindi. But since Hindi, like any other regional language, would take some time for its development, English could continue to play this part. The Council desired that implementation of the policy in this respect should be more purposeful and that care should be taken by universities to ensure that the transition was made without harm being done to the quality of education. The Council also laid stress on the importance of teaching English as a compulsory subject, not only in the transitional period but even after its replacement by regional languages as the media of instruction.

We considered it essential to make an enquiry in regard to the medium of instruction to have the up-to-date position ascertained. The replies received from 49 universities and 4 institutions deemed to be universities under Section 3 of the U.G.C. Act are summarised as under :-

(a) English is the medium of instruction at the post-graduate level in all non-language subjects in almost all the universities, the only exceptions being the S.N.D.T. Women's University which has Gujarati and Marathi as the media for the Master's Course in Arts and the Varanaseya Sanskrit Vishwavidyalaya where the medium is Hindi and Sanskrit. In the Universities of Agra, Jabalpur, Rajasthan, Saugar and Vikram, the medium of instruction at the postgraduate level is English or Hindi in certain subjects. In the Allahabad, Banaras, Gorakhpur and Jadavpur Universities although the medium of instruction is English, candidates are given the option to answer examination papers in Hindi or the regional language in certain subjects.

(b) English is the medium of instruction and examination in almost all the universities for professional courses like law, education, agriculture, veterinary science, engineering, technology, medicine etc.

(c) In the undergraduate Arts courses, the medium of instruction is English in 18 universities, Hindi in 8, Gujarati with option to use other languages in 2 and English or Hindi or a regional language in 16 universities. For the undergraduate course in Science, the medium of instruction is English in 24 universities, Hindi in 7, Gujarati with provision to use other languages in 1 and English or Hindi or a regional language in 11 universities.

It is apparent from the above that, by and large, English continues to be the chief medium of instruction of university education. Some universities have changed over to Hindi or a regional language at particular stages or permit their use in examinations. It is doubtful whether these changes have been brought about after due preparation. It is also not clear if these universities have fully satisfied themselves about the desirability of the change from the academic point of view.

It seems to us that decisions in this regard have often been arrived at on non-academic considerations and a narrow view being taken of the role of English in higher education. The question of a change in the medium should be decided primarily, if not solely, in the interest of educational values. While other factors may be taken into account before a judgment is made, we would stress that in no case should a change in the medium of instruction involve loss of quality. In fact, we would go to the extent of saying that a change is justified only when the university is confident of raising standards by so doing. It is too often forgotten that academic matters have to be determined chiefly in terms of academic principles and we overlook them at our peril.

In almost all the states in India the medium of instruction up to the secondary stage is today the regional language, with a limited number of schools continuing to instruct in English. It has been argued in this connection that the mother tongue is the most suitable medium through which children could be taught. While this position could be accepted and also supported in view of the comparatively better preparation that preceded adoption of the regional language, standards have been adversely affected by its introduction at the university stage in the absence of a similar readiness. It is also to be noted that switching over to the regional language at the university stage calls for a greater amount of preparation than at the school stage, in view of two factors. Firstly, in any subject at the university stage, the area of pertinent knowledge to be covered is very large, including as it does a consideration of world thinking and research. Secondly, the technology of knowledge in the university differs widely from the one used in the schools, as the university student is expected to acquire considerable knowledge by independent reading of books and journals. One is likely to be a poor graduate if his access was to only one or two books.

In the absence of a planned approach, a situation may arise in the universities which is neither favourable to the regional language nor to English as the medium of instruction. In the circumstances, acquisition of out-dated knowledge by the students isolated from current trends of thought becomes a real threat. The experience of the Osmania University for nearly a quarter of a century, using Urdu as medium of instruction is certainly enlightening. In spite of an army of translators, with no apparent shortage of funds, these efforts were not crowned with success, and eventually were given up. Unless an Indian language has grown upto its full stature, with a good literature in scientific and other subjects, the move for its acceptance as the medium of instruction immediately would be a retrograde step. It is true that in Japan, Japanese is the sole language in universities and the Japanese were faced with a problem similar to ours in the beginning of the century and they retained their mother tongue and translated into the Japanese literature the necessary scientific works. All the official languages of India are phonetic and, therefore, far ahead of and better than an ideographic language like the Japanese, but Japan did not have the

advantage that India has, namely an ability to read, write, speak and understand a world language like English. Moreover Japan had only one language for the whole country. If the Japanese were placed in circumstances similar to ours, they would not have perhaps given up their knowledge of the European languages, and introduced Japanese on such a large scale. Furthermore, even today, the intellectual elite in Japan speak and understand English and German, and English is a compulsory subject of study in schools and universities.

No one will question the right of universities to introduce any language as the medium of instruction which they consider to be educationally sound. But what is not so apparent is that the medium should be changed without proper and careful planning. The following conditions have, in our opinion, to be satisfied before a change is contemplated.

First, there must be competent teachers in sufficient numbers for teaching the different subjects through the new medium. It should also be possible to provide a sufficient number of good books and reference books and journals in these languages. The university should take steps to translate into the regional language text-books in English which are read in the pre-university and the first year of the three-year degree course. This should be done as a preparation for the eventual change-over from English. If this work is done slowly, carefully, and according to plan, the books that will be available in the regional language are likely to be good books, well written and well illustrated, which will effectively replace the books written in English. Unfortunately, the impatience and zeal of the protagonists of the regional language are not always matched by their efforts to initiate the steps required for bringing about the change.

Secondly, where the medium of instruction changes from the school to the university or from the under-graduate to the post-graduate stage, we have to ensure that students do not suffer as a result. If, for example, a university has the regional language as the medium of instruction in the pre-university course and English for the undergraduate courses, the student should be given a sound training in English during the pre-university year so that he can follow the lectures delivered in the class and also supplement them by private study.

Thirdly, the far-reaching consequences of a change in the medium have to be taken into account before any replacement is thought of or effected. It would be desirable to undertake some experimental studies concerning the relative performance of students who have studied through the English medium and others who have not. Tests should be carried out to ascertain whether those receiving instruction in the regional language or Hindi show better knowledge of their subjects and are able to write more intelligently on them than those who receive instruction in English. Our investigations have shown that in some instances this was definitely not the case, that the best students elect English as their medium of instruction and the standard of attainment among them was therefore much

higher than among the others. This was noticeably the case at Banaras Hindu University.

Even when the medium of instruction is changed to the regional language, it will be necessary to provide for the imparting of an adequate knowledge of English. English is a great integrating factor, both for unity in India and for access to world literature in many subjects of science, technology etc., in which new discoveries are taking place every year. A fair knowledge of English is therefore essential for the student to have contacts with a wide range of reading material. There can be no doubt that in its absence libraries are bound to lose much of their usefulness and our students will not be able to profit by the advances being made in the different disciplines. It is profitable to recall here what was said on this subject by the University Education Commission. "English, however, must continue to be studied. It is a language which is rich in literature—humanistic, scientific and technical. If under sentimental urges we should give up English, we would cut ourselves off from the living stream of ever-growing knowledge. Unable to have access to this knowledge, our standards of scholarship would fast deteriorate and our participation in the world movements of thought would become negligible. Its effects would be disastrous for our practical life, for living nations must move with the times and must respond quickly to the challenge of their surroundings. English is the only means of preventing our isolation from the world, and we will act unwisely if we allow ourselves to be enveloped in the folds of a dark curtain of ignorance.*" The Review Committee on English appointed by U.G.C. also has expressed a similar view. It says, "The pupil must learn the language well enough to be able to read books in English in his subjects of study. Even if he does not specialise to any very high degree, he will find it necessary to read books, journals, reports, etc., on his subjects in English. Further, he should be able to read non-specialised, non-academic books in English, because even now no Indian language is in a position to replace English as India's "window on the world".**

English will further provide a common link for inter-university communication and contacts not only within India but also between India and other countries. A student or teacher, who wants to migrate from one university to another, would be able to do so only if instruction is provided through a common medium or, in its absence, if there is a link language which could be easily understood at all places. Universities cannot grow as isolated centres of learning. It is, therefore, a matter of the utmost importance that there is a healthy interchange of ideas and exchange of students and teachers between universities. As the late Prime Minister Jawaharlal Nehru pointed out in his address at the Vice-Chancellors' Conference, 1962, "I have little doubt that the medium would ultimately be the regional language which is good for the student undoubtedly, but that

* Report of the University Education Commission, p. 325.

** Report of the English Review Committee, p. 7.

creates a certain difficulty about the universities not becoming quite isolated from each other. That is a grave danger. Now, how should they keep contacts, for professors to be exchanged, and students also? That is a vital matter because it would be highly dangerous and harmful and will come in the way of progress if there are not these contacts. Now the contacts, so far as language is concerned, can apparently only be, as we are constituted today, either through Hindi or English. At the present moment they are in English; it is admitted, and even if the change takes place, it will probably be some time before those contacts are fully in Hindi, but anyhow Hindi and English are the two link languages which should, I think, exist both on practical considerations and other*."

The indispensability of English as a language of intercourse between universities in different parts of the world is another aspect which has to be kept in mind. It is noteworthy in this connection that even in Russia English is taught as a second language in the schools as well as in the universities. The academic arguments which have influenced such a realistic country as Russia should convince us too regarding the advantages of English. While the world is becoming more and more united on the political, economic, scientific and other planes, we should not do anything that would destroy unity and make intellectual intercourse impossible between one university and another in India and between Indian universities and universities abroad.

It is, therefore, obvious that in our situation some type of bilingualism is inevitable and that every student should acquire an adequate knowledge of English at the secondary stage as well as at the university stage**. It has to be made sure that the stage at which students start reading English and the methods employed at different stages to teach English are suitable. In this connection, the special methods which have been evolved recently for teaching English as a foreign language are worthy of note. A greater emphasis will have to be placed on the teaching of English language as a tool of knowledge as distinguished from its teaching as literature. This will also require the training of teachers in sufficient numbers in the technique of teaching English as a language. The universities should take active steps for utilising the facilities provided in this behalf by such institutions as the Central Institute of English at Hyderabad. Also it will be desirable to institute an optional group in the English M.A. course to meet this need. The rather out-of-date techniques of teaching languages in our universities will have to be given up and use made of modern techniques and equipment which have been developed in recent times in different centres of advanced study and research in this field.

The university student's ability to understand and use the English

* Vice-Chancellors' Conference, 1962-Report, p. 44.

** It would be a distinct advantage to use technical words translated into the regional languages simultaneously with international terminology at the school stage and in the pre-university course.

language is, in our view, so essential for the maintenance of standards that a high priority has to be given to its teaching in our academic programmes. It is a matter of regret that its value is often under-rated by the protagonists of the regional and national languages without realising that there is no inherent antagonism between the two and that our languages could only benefit by their association with English. Another major difficulty in the way of teaching of the English language is the paucity of competent teachers. We think that the situation could be remedied to some extent by organizing refresher courses and summer institutes for the existing teachers on a large scale and by increasingly utilizing equipment which have been specially devised for language teaching.

The importance and urgency of this problem has not yet been fully appreciated by the universities and colleges. While the interest shown by some institutions in strengthening and modernising their English teaching is commendable, much more remains to be done in this direction. It is also necessary to impress upon those universities and colleges which have not so far shown a real awareness of the useful role which English can play in the furtherance of their studies and research that continued inaction is bound to result in a weakening of their academic standards.

CHAPTER X

EXAMINATION REFORM

Successive education commissions and committees have emphasized the need for examination reform and suggested specific measures towards this end. The University Education Commission recognising the chronic nature and magnitude of the problem, went so far as to say "We are convinced that if we are to suggest any single reform in university education, it should be that of the examinations".* The Commission recommended the introduction of new methods of objective testing, measurement and appraisal, to be supplemented by the essay type of examination after minimising the outstanding defects of the latter viz., the subjectivity and the consequent inaccuracy of marking. The Secondary Education Commission 1952 expressed the view that "All circumstances conspire today to put an undue and unnatural emphasis on examinations, specially the external examinations and they have come to exercise a restricting influence over the entire field of Indian education to such an extent as almost to nullify its real purpose".** The Commission suggested far-reaching changes in the structure of both internal and external examinations such as a reduction in the number of examinations, minimization of the element of subjectivity in the essay type examinations, introduction of objective tests and maintenance of school records.

The University Grants Commission also appointed an expert committee under the chairmanship of Shri S.R. Dongerkery in September, 1957 to examine the problems connected with examination reform. The Committee rightly took the view that "Examination is an aspect of the educational process which is intimately linked with its other important aspects—teaching and learning—and that teaching, learning and examination actually constitute a unity of functions. Teaching as well as learning are bound to be affected by a defective examination system since both are dominated by the objectives that govern examinations".* The Committee recommended an improvement of admission procedures, institution of tutorials and seminars, continuous assessment of students, holding of seminars and conferences, use of methods of evaluation other than the essay type and research in regard to both the educational and technical aspects of examination.

Our system of examinations is closely related to our practice of laying down the syllabus of study in a subject. Since there is, by and large, an insistence on prescribing a syllabus in as detailed a manner as possible in

* Report of the University Education Commission—Volume 1, 48-49, p. 328.

** Report of the Secondary Education Commission—p. 146.

* Report on Examination Reform p. 1.

many universities, there is not much scope for the teacher to arrange materials in his subject and to organize his teaching in his own way. The syllabus, again, encourages the habit of memorisation, as also the tendency to resort to notes and guides because of the repetition of similar questions in successive examinations. It is therefore essential to experiment with methods of teaching of a given "paper" or course, and demanding from students and teachers alike, a flexible approach to examinations.

It is not necessary to point out that apart from the academic aspect of the question, examinations have three important functions to fulfil. Firstly, the assessment made by universities of the performance of students indicates to the world outside, including employing agencies, the competence, worth and attainments of students on their completing various courses of study. Secondly, it is a measurement of the development of the student himself as a result of the educational process through which he has passed in the university. Thirdly, it indicates to other universities and professional institutions the suitability or otherwise of the student for entrance to and instruction in different areas of study and training. All these, no doubt, require on the part of the universities an appreciation of the crucial importance of the role of the examinations and of the need to conduct them with the utmost sense of responsibility, care and competence. Unless this is done, an incorrect picture will be presented of the student to the outside world, to himself and to other educational institutions. If these facts are fully borne in mind by the universities, many of the flaws and drawbacks that now characterize the examination system would be rectified and steps taken to defend it against them.

In view of these considerations and the weighty pronouncements which we have already referred to, the reform of examinations has become a matter of great urgency in our universities. We therefore feel that it is necessary to deal briefly with a few aspects of the question and suggest how some of the difficulties could be met.

One difficulty in this regard pertains to the internal evaluation of the work done by a student during the course of his study. The UGC Committee on 'Examination Reform' had recommended the desirability of periodically testing students and of maintaining a record of the assessments made. It had also suggested that the work of the student should be regularly evaluated and some credit given for it in the final examination. A number of universities e.g., Agra, Andhra, Annamalai, Banaras, Baroda, Delhi, Jadavpur, Panjab, Patna, Poona, Rajasthan, S.V. Vidyapeeth, Vikram and Visva-Bharati have introduced sessional work and some of them take this into account in the final examination. It appears, that this practice is not common in all the faculties and there are some universities which have it for professional courses only. One or two universities had to abandon the experiment, as it was not working properly. It was found that in some of the affiliated colleges attempts were sometimes made to raise the value of the sessional work with a view to improving the

position of their candidates in the final examination. We feel, however, that internal assessment has great potentialities and it should not be beyond our ingenuity to solve this problem. It has to be understood that the main purpose of introducing sessional work for students is not to evolve a fool-proof system of evaluation but to persuade the student to apply himself regularly to his work. As matters stand, it is only during the last two or three months of the year prior to the final examination that students work seriously. We have therefore to see that this attitude of indifference leading to shallow knowledge is discouraged and students are encouraged to apply their minds regularly to their studies.

How shall we increase the reliability of internal sessional evaluation ? One suggestion which has been put forward is that for the candidates of each institution the internal marks should be scaled to the same mean and standard deviation. Some such procedure is necessary, since the standards of evaluation in different institutions will usually show large differences. Without scaling, the combined percentage may well be less trustworthy than the external marks alone. Some other suggestions have also been made to us, for example, that teachers who are found guilty of inflating the internal marks should be debarred from all remunerative work of the university or that colleges which have a tendency to over-rate their students should be taken out of the scheme. We are, however, aware of the difficulties in putting these into practice.

Even if it is not possible to add marks of internal tests to the final examination, other kinds of importance can be given to them. It is not necessary to assume that if sessional marks are not added to the final score of the candidate, students will not do their home assignments and exercises seriously. It would be equally unsatisfactory to exclude information about a candidate's performance, as this record is as valuable as the marks obtained by him in the final examination. It has been therefore suggested that each student should be supplied with his marks in the final examination together with a comprehensive record of his internal assessment and other kinds of proficiency. The ranking of a student may be on the basis of his performance in the final university examination, but he may be given along with his diploma, a certificate from the institution attended by him indicating the marks obtained in the internal tests etc. Apart from discouraging the institutions to exaggerate their marks, this record will also be useful as a comprehensive statement of the student's achievement. The college certificate together with the university diploma would give his prospective employers a better insight into his attainments and ability.

Another alternative would be to use objective tests for the purpose of internal assessment. We do not wish to enter into a detailed discussion of the relative merits and demerits of the objective type and the essay type of examination, but one great advantage of the objective test is that the subjective element is almost totally absent. Out of a number of alternatives which are given to each question the candidate has to mark one which is

the best in his judgement. Such answers give the same total score, and do not depend on the mood or prejudices of individual examiners. The use of objective tests will not only make internal assessment more reliable but will also ensure speed, economy, and efficiency. The tests can be administered easily and the scoring is also quick. Their use will further reduce the quantum of correctional work which has become a nightmare to many of our teachers.

While objective tests can be used for specific purposes, such as admission of students or the evaluation of their sessional work, they cannot in our view replace the advantages of the essay type examinations. Together with the application of objective tests in internal evaluation, we should therefore also strive to improve the reliability and validity of the essay type examination.

Ideally a sound examination system must satisfy two important conditions. It must be valid i.e., it ought to measure some definite attainment which is required to be measured. The test of validity is a close correspondence between the examination score of the candidate and his true worth. The examination must also be reliable i.e., it ought to measure with accuracy whatever it is expected to measure. The first test of reliability is that if the scripts are examined by two different examiners, there should not be any difference in evaluation. The second test consists in the candidate getting the same mark on two similar papers in the same examination.

Our aim should be to remove the sources of error from the present method of examination instead of replacing it by some other method which may prove to be equally unsatisfactory. Even the critics of the essay type examination agree that it offers a unique opportunity to the student to express himself freely, to analyse and organize his thoughts and the available material. Another asset of the essay type examination is that it provides scope for the exercise of creativity and imagination. If students learn by memorising or answer questions in a stereotyped way, both students and teachers are to blame for it. There is also no assurance that in an objective type of examination, students will not become after some time, 'test-wise'. The greatest shortcoming of our present arrangements is that we place too much reliance on a single measurement of the students' performance. We therefore feel that there should be a judicious combination of the various methods of evaluation to suit particular conditions and purposes and that both the internal and the external examinations and the objective and the written type of examinations could be suitably combined.

In recent years there has been much discussion on the relative merits of internal and external examinations. It has been suggested that, for a variety of reasons, the "credit system" in vogue in American universities is superior to the system of holding formal written examinations, as practised in British and Indian universities. It seems to us that a controversy of

this kind does not pay sufficient attention to the fact that a mere change over from one set of techniques to another set of rigid techniques may prove equally unsatisfactory. It cannot be over-stressed that all techniques are subject to inherent weaknesses of their own and being instruments can be abused.

It is, however, true that a most serious deficiency of the present examination system in India is that it tends to test the capacity of the student to reproduce facts and figures rather than his educational development. Whether one adopts a system of internal evaluation or external examinations, what needs to be ensured is that the questions put to the students find out whether they have benefitted from their studies and are capable of applying what they have learned to new situations. In other words, the questions have to be 'problem oriented.' No educational purpose is served by setting questions designed to elicit descriptive or analytical information which can be mechanically learned by the student, as so often is the case in our universities.

Some universities have two to three examinations including the final examination under the three-year degree course. A view is held in certain quarters that the number of annual examinations should be reduced to make more time available for teaching and also to enable universities and colleges to offer continuous instruction. We however think that the annual examinations have some merits. First, they afford an early opportunity to teachers to ascertain how students are progressing and to identify their weak points as well as their suitability for further studies. Secondly, they reveal to the students the point at which they stand and also act as an incentive to apply their minds to their studies. Thirdly, it is difficult to visualize how the old system of testing students by means of one comprehensive examination at the end of the course could be considered equitable in a situation of rapidly growing dimensions of knowledge. In the changed circumstances of today, it seems reasonable that universities should think of arranging examinations in parts and space them conveniently.

The report on 'Examination Reform' to which a reference has been made earlier, has also analysed the technical problems connected with examinations such as the problem of marking, scaling, classification of students etc. and offered valuable suggestions to remedy some of the defects inherent in the present system. It is well-known that the question papers set at university examinations have a number of defects such as the poor sampling of content, ambiguity, generality and lack of standard answers. The most disconcerting feature is that the paper setters do not devote sufficient time to the framing of questions. We feel that a very important requirement of a paper is that it should be related to well-defined objectives. In this connection we would draw attention to the report of the four seminars organised by the University Grants Commission under the leadership of Dr. B.S. Bloom of the University of Chicago published under the

title 'Evaluation in Higher Education'. The report lists a number of possible objectives for various Arts and Science subjects at the undergraduate level, followed by a few illustrative examination problems to yield evidence of the student's attainment of the objectives and behaviours. An illustrative statement in respect of objectives in chemistry and political science at the undergraduate level is attached as Appendix 25.

We consider a balanced paper to test various objectives such as recall of knowledge, comprehension, application, analysis, synthesis and evaluation, rational and necessary. The questions should also define precisely the direction and scope of the answers desired. The candidate should not be left to guess what is in the mind of the examiner. Far more attention needs to be given not only to the choice and design of questions, but to the number of questions necessary to sample effectively a given area of knowledge. The practice of allowing easy optional questions also needs reconsideration. Another abuse which needs remedying is the convention that questions included in the previous year's examinations will not be repeated.

Steps will have to be taken to ensure uniformity in evaluation. The paper-setter should prepare a tentative outline of answers. If he does so, it will reveal to him weaknesses present in the structure of the questions themselves and enable him to correct them prior to the issue of the paper. The outline of answers should indicate clearly the main points to be considered by the examiner and the value attached to them. This should be supplied to all examiners working under the direction of a head examiner. Some of the Boards of Secondary Education have already adopted the practice of holding seminars and workshops for paper-setters, where the principles of paper construction are examined and discussed. This excellent practice should be extended to university examinations.

The question of combining marks obtained by a student in different subjects is also important. The present practice of combining them to get an absolute total is incorrect, as the final ranking of a student is affected by the average marks in a subject as well as by the spread of marks. If we combine marks in two subjects say chemistry and mathematics and marks in chemistry vary from 30 to 60 while marks in mathematics from 5 to 95, the result will be that mathematics will receive three times the weight of chemistry. In effect, we shall be evaluating the performance of the student on his mathematics rather than his chemistry. It is therefore necessary that marks are brought to a common mean and standard deviation before they are combined.

The present methods employed in moderating examination results are not in keeping with recognized statistical procedures. It is true that some deserving students fail on account of the vagaries of the examinations but awarding of grace marks is not a good corrective measure. One of the suggestions which has been put forward in recent years is to calculate

the probability of passing and to pass all students above an approved limit. Thus in an examination consisting of three subjects where the minimum pass marks in each subject is 36 out of 100, the passing probability of a student securing 36, 36 and 36 marks would be 16 per cent, assuming the standard error of marking in each subject to be 5. Since according to university rules a student getting pass marks in all the subjects is declared to have passed the examination, all students who have a passing probability of 16 per cent or more should pass. For example, a student securing 43, 43 and 31 marks would pass while another student securing 40, 39 and 32 would fail, as the passing probability is 16 per cent in the case of the former and 15 per cent in the case of the latter. This method of moderating results will not add much to the work of examination departments as the cases for review in a university examination are not likely to be many and the probabilities can be computed easily with some practice.*

The time taken in some university examinations is also excessive and needs energetic action on the part of the university authorities. In one university the results of the March-April examination, we were told, do not become available till August or September and thereafter it takes some months for admissions to be made. A more or less similar situation prevails in a few other universities also. As a result, a considerable part of the student's time is wasted in waiting for the declaration of his examination results. The teaching time available to the colleges and departments is also reduced. The period between the declaration of examination results and the deadline fixed by the universities for admission is so short that students cannot plan their future education calmly and carefully. Many students rush to the universities instead of going to more suitable institutions of learning, because they find, largely due to paucity of time, that it is difficult to secure admission to alternative courses. One of the causes for such a state of affairs is the continued use of obsolete methods of tabulation and analysis of marks. We feel that the time has come to introduce mechanical methods for these purposes.

Another reason for delay is related to the widespread evil of examiners being asked to undertake the evaluation of very large numbers of answer books at a time. As examination work also brings an additional income to the teachers, there has come into being in the universities a scramble for the spoils of examination work. Instances have come to our notice of teachers receiving rather shocking numbers of answer papers from different institutions (estimates of the actual number have differed). Such teachers, apart from damaging their own teaching and research are also unable to pay enough attention to the work of evaluation itself. We feel that in the interest of maintenance of standards universities should lay down clearly the maximum number of answer books that a teacher may take for valuation during a year, either from his own university or from outside.

* Marks should be arranged in a descending order for working out passing probabilities from tables given in 'Three studies in Examination Technique' by Dr. H.J. Taylor.

CHAPTER XI

COLLEGES

The spectacular increase in the enrolment of students in the universities is also reflected in the rise in the number of affiliated and other colleges in the country during the last decade. The number (excluding colleges under the Intermediate Boards) rose from 851 in 1953-54 to 2,111 in 1963-64, an increase of approximately 2.5 times. A break-up of these figures according to type of management is given below :

Year	Total number of colleges	University colleges	Private colleges	Government colleges
1953-54	851	108	513	230
1954-55	912	104	567	241
1955-56	1004	110	621	273
1956-57	1107	115	687	305
1957-58	1171	97	752	322
1958-59	1252	97	813	342
1959-60		Not available		
1960-61	1537	99	1027	411
1961-62	1783	107	1223	453
1962-63	1938	133	1333	472
1963-64	2111	128	1485	498

It is apparent from the above table that expansion has been more rapid in respect of private colleges than in government or university colleges. Enrolment in colleges increased about threefold from 1950-51 to 1960-61; from 3.73 lakhs in 1950-51, it increased to 6.34 lakhs in 1955-56 and to about 9 lakhs in 1960-61. By the end of the Third Five Year Plan, 13 lakh students are estimated to be enrolled in colleges in India. Affiliated colleges together account for nearly 85% of the total enrolment of the universities and colleges, as indicated below :—

Year	Total enrolment in the universities and colleges	Enrolment in univ. depts./ colleges	Enrolment in the affiliated colleges	Percentage in affiliated colleges
1961-62	9,80,380	1,38,800	8,41,580	85.8
1962-63	10,82,666	1,63,493	9,19,173	84.9
1963-64	11,84,697	1,71,665	10,13,032	85.5

It is a highly significant fact that out of 1.2 million students in the universities and colleges more than 1 million are enrolled in the affiliated colleges. M.A. and M.Sc. enrolment between the affiliated colleges and teaching departments of universities is in the ratio of 3 : 4 approximately. Again, of 68,634 teachers (including tutors and demonstrators) teaching at university level, 57,112 or over 83% were teaching in affiliated colleges in 1963-64. These facts show what an important position colleges occupy in the field of university education. It further follows that high standards of teaching and learning cannot be maintained in the field of higher education unless the quality of these colleges is substantially improved. This point has been repeatedly stressed in the annual reports of the University Grants Commission. The report for 1962-63,* for example, states: "The quality of university education in India will largely depend on the standards maintained by colleges, and unless it is made possible for them to improve their staff, equipment, libraries, laboratories and other facilities, no real improvement of university education will be possible." While the importance of colleges in any attempt to raise quality of education cannot be ignored, they appear to have so far received only a low priority in the various schemes of development sponsored by the University Grants Commission. This, it is understood, has been largely due to the paucity of funds placed at the disposal of the Commission.

The Commission has initiated some schemes for assisting colleges to improve their physical facilities and personnel, in accordance with the regulations framed under Section 2 (f) of the U.G.C. Act. A list of colleges has been drawn up which fulfil certain minimum conditions and are eligible to receive assistance from the Commission. But assistance has generally been limited to the prescribed grants under the three-year degree course scheme and to an overall ceiling of Rs. 1.5 lakhs for other schemes such as non-resident students' centres, hobby workshops, hostels, staff quarters, extension of libraries and laboratories, purchase of books and equipment etc. Grants for the development of postgraduate departments in Humanities and the Basic Sciences have also been provided to some of the colleges. Thus the total assistance available to the colleges for their development programmes has been of a limited order. A sum of Rs. 81,82,029 only was paid to the colleges during the year 1962-63 under the schemes listed above as against Rs. 4,11,68,178 paid to the universities towards the appointment of additional staff and the provision of essential physical and academic facilities. The inadequacy of these funds becomes apparent when account is taken of the large number of colleges and the fact that more than 85% of the university population in India are enrolled in them.

No doubt, there are some well established colleges which have been in existence for more than a century. These include colleges set up by State Governments (formerly Provincial Governments) and missionary

* Report of the University Grants Commission 1962-63 p. 19.

institutions both of which had at their disposal ample resources. The government colleges were able to appoint on their staff highly qualified scholars and scientists, many of whom were either members of the Indian or State Educational Services. The missionary colleges, on the other hand, could obtain a number of dedicated people from western countries, many of whom brought with them not only great competence but also the goodwill and support of a number of educational societies. Most of the government and missionary colleges offered residential facilities as an integral part of their educational system. They were thus well endowed to impart education of a high order. It was therefore not surprising that these colleges produced some fine types of students whose potentialities could flower into impressive and useful careers in later life. It is, however, true that today even these colleges are unable to maintain the old standards which made them renowned in the past. If even the good institutions have declined in recent years, it is not surprising that other colleges have deteriorated much more.

Every year a number of colleges come into being without any thought being given to their ability to provide at least a modicum of the requisite physical facilities and personnel. They have come up under various circumstances including political pressure, parochial sentiments, regional and caste rivalries etc. While it is certainly far from the intention of universities to foster the birth of such colleges, universities are often forced by circumstances to protect them after they have come into being. It is true that they have to fulfil the conditions laid down by the universities before they are permanently affiliated, but the colleges usually take a long time over it. Several cases have come to our notice of colleges being affiliated to universities in a temporary way almost permanently. We have no doubt that one of the most serious inroads into university standards is being made by these 'sub-standard colleges'. Until we are able to ensure that colleges are not set up without fulfilling certain essential conditions relating to facilities, staff, resources and organisation of studies, the field of higher education will continue to contain cesspools capable of contaminating large areas in it.

Another aspect of the problem of sub-standard colleges is linked up with the fact that a number of colleges in India do not have adequate enrolment to make them a viable economic or intellectual unit. A recent study made of this problem in the University Grants Commission has revealed that about 15% of the colleges have an enrolment of less than 100 and enrolment in nearly 44% of the colleges is less than 300. This situation is also related to the larger question of establishment of colleges in various parts of the country without taking into account the possibility of utilising the existing institutions to admit more students. Unless we use present facilities to the fullest extent, we can hardly justify the setting up of large numbers of new colleges.

The University Grants Commission has expressed the view that "a reasonably uniform system for this purpose should be introduced in all

universities", and has recommended that "the system followed by the Universities of Andhra, Delhi and Madras which seemed the best should be brought to the notice of all the other universities for the formulation of new rules and principles in this regard." (Appendix 26). The following observations of the Committee on Colleges appointed by the University Grants Commission, which considered the problem further in 1963, are noteworthy: "It would be necessary to adhere to certain minimum standards and requirements which every new college seeking affiliation should fulfil. It would be undesirable to allow institutions without adequate facilities to spring up since such institutions bring down academic standards and make a negative contribution to the cause of higher education. The Committee agreed that before a college is permitted to enrol students in a particular course of study, the minimum requirements for conducting the course efficiently must be fulfilled. No college should be granted affiliation unless the basic requirements relating to staff, library and laboratory equipment are provided at the very outset. Development grants available from the University Grants Commission could be utilised fruitfully only by such institutions as fulfilled the minimum requirements. It was pointed out that since correspondence courses had started functioning, there should be no desperate hurry in establishing new colleges without proper equipment and staff".

In this connection, we would like to draw attention to the norms and other conditions formulated by a Committee of the U.G.C. in regard to staff requirements and physical and other facilities which have to be provided in colleges if good education is to be imparted by them. (Appendix 33). These may, it is suggested, be commended to the various universities for adoption with reference to proposals for setting up colleges. While such measures would go a long way in toning up the affiliated colleges by ensuring that affiliation is granted only to colleges which have adequate staff, facilities and equipment, there are certain features in the present system of affiliation and supervision of colleges on which we would like to add some further comments.

First, the power of granting affiliation should be vested in the universities and not in the state government. The present position in this regard in some of the universities is that the chancellor is the final authority for granting affiliation in the Universities of Agra and Allahabad, whereas the Senate is the final authority in the Banaras, Bhagalpur, Bihar, Burdwan, Calcutta, Gauhati, Madras, Magadh, North Bengal, Punjabi, Ranchi, Sri Venkateswara and Vikram Universities.* In the Universities of Bombay, Gujarat, Jabalpur, Karnatak, Marathwada, Nagpur, Punjab, Saugar, S.V. Vidyapeeth and S.N.D.T. Women's, the proceedings of the Senate relating to affiliation of colleges are forwarded to government for final orders. Even in cases where the universities are free to determine the

* In the State universities of Bihar, though the power of affiliation vests with the Senate, it has to be approved by the Bihar State University Commission.

conditions of affiliation, they are not always free to enforce them and are, in fact, subjected to many pressures. We are of the opinion that the power of affiliating colleges should vest in the universities and there should not be any interference or pressure from the state governments or any other agency in the exercise of this freedom on the part of the universities. A suggestion made to us in this connection that the government should declare the number of colleges to be set up during a plan period in advance and leave to the universities the task of implementing the programme deserves consideration.

Secondly, the conditions laid down by the universities are often rigid on non-essentials. The order of importance is often buildings, equipment, men; whereas the reverse order is the right one. If there are some good, keen and able teachers, they will produce better students even in a barn than wrong men in fancy buildings. This is not to underrate the importance of adequate physical amenities for carrying on the work of the colleges. As pointed out earlier, certain minimum requirements in this behalf, particularly Science equipment and books, have to be satisfied for the smooth working of colleges.

While the colleges should be given as much freedom as possible to grow according to their resources and ability, to make experiments and to vary their methods, it is the responsibility of the university to see that no college is allowed to lower the quality of its education. It is therefore not enough for the university to lay down the conditions and to grant affiliation on the basis of these conditions and then to dissociate itself from or become uninterested in the activities of the college. Much good can accrue from bringing the universities and colleges closer together. A recent report observes, "The present bond of affiliation is far too tenuous, and the colleges, particularly the smaller and more distant ones, cannot acquire the feeling of being part in any real sense, of the university. Affiliation, from the Latin *filius*, a son, has the meaning of being adopted as a member of the family; but in practice one might suppose it to have come from *filus*, a thread, as though the colleges were connected with the university merely by a string. The university fixes the minimum number of teachers, often the minimum number of lectures, defines the syllabus for the final examination, but often has no real share in the process of education. For this reason there is great variation in the quality of undergraduate education, and at its worst it can be very poor indeed. The university needs to concern itself much more actively with the actual process of undergraduate education, and this is a problem which the affiliating universities have, broadly speaking, not hitherto solved."*

In an affiliating situation the weak colleges tend to determine the policy of the university in regard to courses of study, teaching requirements,

*Report of the Committee jointly appointed by the University Grants Commission and the Ministry of Education, to consider the question of setting up a university for the north-eastern region of India.

examinations etc. The good colleges, which are capable of rising to much higher standards are consequently not allowed to do so. Unless these colleges, which can do better than the rest, are permitted to go ahead with their plans for modernising and improving their academic programmes, they will not be in a position to hold on the superior standards indefinitely. We, therefore, suggest the following measures for consideration :

- (1) A certain number of good colleges may be given a kind of "autonomous" status and offered opportunities to experiment with new courses of study, methods of teaching, evaluation etc. The colleges which are in a position to introduce advanced or up-to-date courses in fields in which their sister colleges may not be able to do so could be given special permission by the university to effect the desired reforms. Again, individual colleges may be allowed to adopt their own systems of internal evaluation to encourage the students to work regularly, even though other colleges may not find this practicable. In regard to teaching methods also, there is considerable scope for variety. The affiliating universities should be willing to entertain proposals for requirements of this kind from the colleges which, after careful consideration, are in their view capable of such experimentation. Unless necessary freedom and flexibility are given to individual colleges for awakening intellectual interest and promoting better education, we are afraid that it may not be possible to raise standards in the widespread area of collegiate education.
- (2) Special assistance will have to be made available to selected colleges which are doing good work. The present policy of spreading resources thinly over a wide area is not conducive to the pursuit of excellence. Colleges, we feel, have to be built up with the same care and consideration as universities are, by such agencies as the University Grants Commission and the State Governments and greater attention will have to be paid to strengthening their programmes and organisation, including residential facilities.
- (3) A number of outstanding colleges all over the country should be developed in the same way as 'centres of advanced study' are in respect of postgraduate teaching and research, as models for other colleges. These institutions may, *inter alia*, provide opportunities to teachers from other colleges to participate in their activities. They may also be entrusted with the responsibility of holding periodical refresher courses, summer institutes etc., for the benefit of undergraduate teachers.
- (4) We consider it also desirable to set up university colleges or centres in selected places. These should be looked upon as pace-setters in the field of collegiate education. There are many

advantages in the establishment of institutions of this kind, the most important being the possibility of the university itself taking a direct interest in them. They should then be in a position to command better facilities in the shape of well-equipped libraries and laboratories and capable staff. Exchange of teachers between the university departments and such colleges could also be encouraged with a view to raising the quality of their instruction, the inter-action between the two groups producing the requisite dynamism for this purpose. A valuable ancillary advantage in the setting up of a university college is that it could, in due course, become the nucleus for the establishment of a new university. The economic and other merits of such an approach are obvious.

- (5) In the case of all colleges, assistance will have to be given on a much more liberal basis than has been possible hitherto. With the increasing incidence of taxation on private fortunes and consequent drying up of surplus resources, which otherwise could have been available for educational development, the responsibility for financing collegiate education will have to be placed squarely on the shoulders of government. We consider the system of the central government meeting 90% of the deficit of the constituent colleges of the Delhi University as a desirable way of dealing with this problem. At present many colleges do not either obtain any assistance from their State Governments or receive only very limited grants which are often determined on an *ad hoc* basis by government officials. This system will have to be rationalised and replaced by a grant-in-aid code which will ensure continuity and adequacy of assistance for the colleges without subjecting them to control by government.
- (6) It would be a distinct advantage to associate, on a more extensive scale than has been the case hitherto, outstanding college teachers with the work of various academic bodies in the university such as Boards of Studies, Faculties and Academic Council. This will enable the teachers to play an active part in the formulation of academic programmes and policy. There should also be periodical conferences, seminars and meetings where the college and university teachers could come together to discuss problems of mutual interest and concern like improvement of courses, techniques of teaching, programmes of research, problems of future development etc.
- (7) Colleges should also be able to invite distinguished scholars and scientists from the university and outside for extension lectures, seminars etc. to expose students and teachers to their influence. Ways and means will have to be evolved to enable college students to periodically make use of the resources of the

university headquarters in the shape of libraries, laboratories, etc. and also to participate in its extra-curricular activities. Steps have to be taken by the university to bring about frequent encounters between the college community and the university community.

No discussion of the problem of improvement of collegiate education would be complete without a consideration of the important part that salary scales play in attracting and retaining the services of able teachers in the colleges. As stated in an earlier part of the report, the position of the universities themselves which offer fairly high salaries, is far from satisfactory on account of the constant 'migration of brains' from the universities to non-university institutions. It is evident that we have to keep a large number of the gifted and experienced teachers in the colleges, if standards in the expanding area of collegiate education are to be sustained and strengthened. We are glad to note that the University Grants Commission has made a beginning by offering assistance towards upgrading the prevailing low salary scales in the colleges. It is understood that upto 1964 about 14,000 teachers working in 461 colleges affiliated to 23 universities received the benefit of the revised scales of pay and that during the first 3 years of the current plan period the Commission has spent a sum of about Rs. 1½ crores on this project. In view of the large number of teachers involved, this is undoubtedly a costly undertaking and substantial amounts have to be deployed to bring about even a small rise in the emoluments of the teachers. Funds, however, will have to be found either by the Central Government or by the State Governments, if the teachers are to be paid salaries which are commensurate with their needs, if not with their attainments. It must be understood [that in a highly competitive wage situation, and of continually rising cost of living, appeals to the 'spirit of dedication and sacrifice' etc. on the part of teachers cannot effectively solve the problem. It is therefore imperative that one of the specific items to be included in the grants-in-aid code for the colleges must pertain to adequate salary scales for the teachers. It will also be necessary to narrow down the wide disparities which now prevail between the salaries of the university and college teachers to prevent the continual exodus of good teachers from the colleges to university departments, thus also affirming that the college sector is in no way less important than the university sector.

A word may also be said finally about the decisive contribution that colleges could make to raising standards of university education in our country. When we look at the spectacle of milling crowds of students 'squeezing' one another on our university campuses, the thought comes to us that a college offers a far more favourable opportunity for building up a real academic community. In the vastness of the university population in India, the smallness of the college community is a hopeful sign. For, many are the intellectual and spiritual values that could flourish in the more

intimate atmosphere of a relatively small college. There is something appalling in the anonymity of the students and teachers in the crowded societies that inhabit the headquarters of many universities, and something really refreshing in the personal relationships and intellectual comradeship that could be cultivated on the college campus. The moral surely is that our colleges need not remain as they are but could be turned into real assets in the economy of the universities, if efforts are made to uplift them from their present position. A programme of this kind can be put into action only by careful planning and by a realistic appreciation on the part of the universities and government of the significant role colleges can play in the furtherance of higher education.

CHAPTER XII

ORGANISATION OF UNIVERSITIES

In the past few years there has been considerable rethinking, both in India and abroad, in regard to the function and organization of the university. In other countries, notably in the United Kingdom and in West Germany, new universities are no longer being established as replicas of the older universities. The fundamental problem of evolving a suitable academic system with an efficient administrative structure is being thought out afresh. We believe that a similar exercise of critical examination should take place in our own situation.

Education in India is a State subject and with the exception of 4 universities, namely, Aligarh, Banaras, Delhi and Visva-Bharati which have been established by Acts of Parliament, other universities have been set up by Acts of State Legislatures. In recent years, certain institutions of higher education have been deemed to be universities under Section 3 of the University Grants Commission Act and not established by legislation. We have also got Institutes of Technology for training in engineering and allied subjects awarding higher degrees which have been recognized by Parliament as institutions of national importance.

The position is more complicated in the matter of financing universities. While grants for the development projects of the universities are the concern of the University Grants Commission, in the case of agricultural education and medical education, they are made available by the Ministries of Food and Agriculture and Health respectively. In the field of technical education, the All India Council of Technical Education examines first the schemes put up by the universities and advises the University Grants Commission regarding allocation of funds to them. Thus a unified system of dealing with higher education, which is essential for maintenance and coordination of standards, is lacking. We are, therefore, of the opinion that only one agency, namely the University Grants Commission, should be made responsible for the care of higher education in all sectors, with the other agencies concerned acting as advisers to the Commission.

It is widely held that universities, as academic bodies committed to the pursuit of truth and to the training of youth, should have a high degree of autonomy and should function without control or restraint by any external authority. They should have the freedom to choose their students, to appoint their staff, to organise their courses of study and examinations and to experiment with new methods of teaching and learning. As Sir Hector Hetherington observed in his recent address to the International Association of Universities* "It is certain that whatever the formal relation of the

*Sir Hector Hetherington—*University Autonomy*, International Association of Universities.

university to its environing authority, the greatest achievements of scholarship and science have been wrought by men who worked by themselves or in free association with others, or in universities which were in no decisive way subject to external control." While in India, the universities enjoy freedom in many of these matters, there are occasions when this freedom is threatened. A recent instance is that of the U.P. Government issuing an order to the Universities of Allahabad and Lucknow defining the qualifications of teachers to be appointed by them. Public and political pressures are also sometimes exerted in respect of matters which are the legitimate concern of the university, as for example, when parents agitate for a lower percentage of marks for admission to the university or when universities are persuaded to introduce the regional language as the medium of instruction. One of the greatest dangers to university autonomy, perhaps, arises from some of the methods employed in the election or selection of the vice-chancellor. In Bombay, Burdwan, Mysore, Panjab, Punjabi the and Sardar Vallabhbhai Universities, vice-chancellors are appointed by chancellor, presumably in consultation with the State Government concerned. In some universities vice-chancellors are elected by their own Senate, for example, in S.N.D.T. Women's University. In certain other universities a committee is appointed consisting of nominees of the Senate, Executive Council etc., and they suggest three names to the chancellor, out of which one is selected by him for the vice-chancellorship. The term of office of the vice-chancellor varies from three to six years and in some universities the vice-chancellor is also eligible for reappointment.

It is not a secret that in several states the vice-chancellorship of a university has become a matter of patronage or reward for services rendered or anticipated. We do not want to suggest any particular method of appointing the vice-chancellor as the right one, but the position has to be accepted that the first condition of ensuring the proper administration of a university is by appointing an able and academically-minded vice-chancellor, preferably from the universities, as the head of the university and then to see that he is given full support, authority and scope to do his work. Even when the first condition is satisfied, the second condition is not always fulfilled, as situations are created where the vice-chancellor is powerless to act according to his judgment, and is reduced to an ineffective and even pitiable figure-head.

We support autonomy not only as a cherished ideal of university organisation, but also from the practical view-point that a university cannot rise to great heights of academic achievement unless it is left to do its work according to its own genius and light. No doubt, freedom lends itself to all kinds of abuses, but it has to be remembered that without academic freedom, the life of the mind will be stifled. Scholars and scientists understand their functions better than any other persons or agency outside the university. It is therefore clear that academic matters must be decided by academic people.

Sometimes it is suggested that since universities in India have very largely to depend on public funds, the government must see that the universities use the funds in accordance with its view of education rather than the university's. We have to note in this connection that utilisation of public funds for university development is not peculiar to India only, but that in almost all countries such dependence is on the increase and in spite of it the principle of university autonomy is respected. We believe that there is no inherent conflict between the principle of accountability and the idea of autonomy as well as between the interests of a democratic state and the objectives of the university.

One important reason why the University Grants Commission was set up in India as an autonomous body was to minimise the danger of government control and interference in the affairs of universities. But while the universities are able to obtain from the Commission funds for their development programmes, they still have to draw their maintenance grants and matching contributions from State Governments. Unless the State Governments also follow the example set by the Commission and deal with universities with the same circumspection and consideration as the Commission does, our universities are likely to be turned into government departments controlled by officials. We hope therefore that the State Governments, as long as they have to shoulder any part of the financial burden of the universities, will take particular care to model their methods of dealing with them on the pattern adopted by the Commission.

Autonomy in academic matters does not, however, mean that universities should be oblivious of social needs. In fact, universities are set up for the satisfaction of certain felt needs of society and they have to be fully sensitive and responsive to them. The university-government relationship has, therefore, to be delicately balanced, government on its side appreciating the fact that a university does its job best when it is placed in an atmosphere of comparative freedom and the university on its part, conscious of government's self-restraint, striving to develop a sense of high social purpose and responsibility. The essence of the work of a university lies in training men and women of rationality, integrity and competence, who can serve society and the nation in different walks of life. In the ultimate analysis, the worth of a university will be judged by the public and a university which does not fulfil its functions will be subjected to adverse criticism.

George F. Kneller, in his book 'Higher Learning in Britain' points out that the late Professor Laski held that the older universities in that country did not fully realize their social responsibilities. Professor Laski, therefore, advocated the representation of all sections of society in the governing bodies of universities. In a country like India, with its growing social and developmental programmes, the need for universities meeting different social requirements is all the greater. However, the participation by laymen in the legislative and administrative organs of the university involves a certain element of risk. It makes the structure of bodies like the

Senate or Court highly unwieldy. In almost all the universities in India the Senate comprises different kinds of members including life members, ex-officio members, representative members, nominated members, elected members, etc. They have very useful contacts with the public but they will become a hampering factor if they get into academic matters. This tendency must be watched as it is reported in one State that steps are being taken to amend the university Act providing for an increase in the number of M.L.A's in the Senate and giving them a place on the Syndicate.

True, according to the letter of the law, the Senate or the Court is given very little opportunity for interfering in academic matters. The general rule is that courses of study and examinations are determined by the Academic Council. These regulations have, in some cases, a much greater sanctity than the ordinances of the Senate. But in practice the authority of the Academic Council to make regulations is affected in two ways. Under popular pressure, resolutions are permitted in the Syndicate recommending to the Council proposals concerning academic matters. This is justified on the ground that even though the Syndicate does not have the power to do this, it can always recommend. This causes considerable embarrassment to the Academic Council. The power of the Council is also interfered with by the Syndicate as an executive body. As the former meets only twice a year in most universities, matters that come up urgently are placed before the Syndicate. Such difficulties will not arise if there is a standing committee of the Academic Council to deal with matters which cannot wait till its next meeting. The work of administration should be conceived as a means towards an end and should not become an end in itself. Bodies like the Senate and the Syndicate are concerned with administration in the narrow sense of the word and should not concern themselves much with academic matters or trespass into areas with which they cannot deal competently.

The constitutions of our universities are modelled on the old constitutions promulgated about a century ago at a time of comparatively slower pace of social development and growth in the field of Science and other disciplines. These procedures have to be reformed to suit the exigencies of the rapid social changes that are taking place in the context of planned development in our country. A democracy which is vibrant with expectations, challenges and opportunities, has come into being in India and our universities cannot deal with such a dynamic situation with a 'bullock cart' administration. Speed is of the utmost importance today when decisions have to be taken quickly and implemented with alacrity. This does not, of course, mean that conditions of freedom which academic institutions have particularly to preserve have to be surrendered. It is, however, essential that the creaking and cumbersome administrative machineries have to be repaired and, if necessary, replaced.

Many universities are obstructed in their work by the existence of a large number of bodies concerned with more or less similar functions. If

universities have to keep pace with the growing body of knowledge, particularly in the field of Science, they have to get rid of not only large bodies representing varied interests, but also to make a re-appraisal of the work of the various bodies functioning simultaneously. One example of unnecessary duplication is the formation of Faculties as well as Boards of Studies in most universities. It has been found by experience that ordinarily, if one of these bodies is effective, the other is merely ornamental. In some universities, particularly of the affiliating type, it is the Boards of Studies that are concerned with the drawing up of courses of study etc. and the Faculties meet rarely for coordinating their work. In the teaching universities, on the other hand, the Faculty meetings are more frequent and the Boards of Studies have comparatively less work, as they merely repeat what has been agreed to by the Faculties. It is, therefore, open to question whether Faculties are at all necessary. The Faculty organisation considered as interposed between the Boards of Studies and the Academic Council has become outmoded. They also have the effect of perpetuating the dichotomy between Arts and Sciences and restricting a free development of research and investigation of border areas. In our view, the Boards of Study can be related to the Academic Council directly. It is noteworthy that in many of the new universities in U.S.A., U.K. and West Germany the Faculty organisation is being abandoned.

We also believe that the task of undergraduate education is so vital that it needs to be under a body charged specially with this responsibility. There should be a Board of Undergraduate Education, and parallel to it a Board of Postgraduate Education. The Boards might jointly constitute the Academic Council, or operate under it, but should have considerable authority to organise the work of the university in their respective spheres.

When unnecessary administration has been removed, what remains should be streamlined, so that it runs smoothly and easily. At present the administrative machinery of the university moves haltingly. An illustration of this is the large number of forms which students are required to fill in at the time of admission to the university and the hostel, for registration by the library and for permission to appear at the examinations. If the information which is available to the university at the time of admission is properly maintained, there should be no need for the student to repeat it every time. It is interesting to note in this connection that Gauhati University has altogether abolished the examination forms. Principals send a single list of the students appearing for the examination. This is a good example of the way in which outmoded procedures can be simplified.

Perhaps one reason for these inordinate delays and unimaginative responses on the part of universities is the lack of harmony between the office of the registrar and the teaching departments. In recent years, a number of universities have been obtaining the services of government officers for the administrative work of the university. Although the university offices require considerable reorganisation and improvement, we feel

that the employment of government officers is not the best way of doing it. We believe that, in general, it will be more in consonance with the atmosphere of the university if from time to time a suitable member of the teaching staff can be trained to take on the duties of registrar. Otherwise, there is a danger of university administration becoming so dominant as to vitiate the academic atmosphere of the university. People who are trained on administrative lines have a tendency to look at rules and regulations as something sacrosanct. In a university such an approach is likely to result in the imposition of a rigid frame-work on academic activities which require a flexible and imaginative approach.

We would also like to draw attention to the heavy administrative work which is often assigned to heads of academic departments. We were told that in many universities they have so much of routine work to do and so many forms, questionnaires, schedules etc. to fill in, that they are left with little time for study and research. Pre-occupation with administration at the expense of scholarship and research is a serious matter. As the late Sir J.J. Thompson once remarked, "Nowadays all the people who can do research are wasting their time administering others who never will be able to do it." We have certainly to prevent a situation in which the best minds of the university are occupied with unnecessary things and unprofitable details. This specially happens in Science departments where a large number of indents have to be prepared and a large amount of stores has to be controlled and checked from time to time. One solution which suggests itself to us is the division of administrative work over as many members of the department as possible. This, of course, requires co-operation and good-will in the department. It would also be worthwhile to examine the different sections and organisations that exist in universities of the advanced countries for the purpose of relieving the teaching personnel from routine duties. The need for complying with superfluous rules and regulations in the purchase of furniture, equipment, apparatus etc., also needs reconsideration. Although financial rules, vouchers, registers etc., are, to some extent, inescapable, they could certainly be simplified and reduced to the absolute minimum. In any case, more clerical assistance should be made available to the departments and it might be considered whether headship could go by rotation among the senior teachers of a department.

To develop in detail these concepts of the academic and administrative structure of the university would be beyond the scope of this chapter. We would only draw attention to some illuminating statements on reform of the administrative machinery of universities, in particular to the report of a special committee set up by the Government of India under the chairmanship of Dr. D.S. Kothari to examine this problem and make recommendations for appropriate reforms.* We would also refer to the recent Reith Lectures delivered by Dr. Albert E. Sloman, Vice-Chancellor of the University of Essex.**

* Report of the Model Act Committee

** A.E. Sloman—*A university in the making*

CHAPTER XIII

MAINTENANCE AND COORDINATION OF STANDARDS

In the preceding chapters we have discussed various aspects of the problem of university standards in India. The question with which we started was, "Have our university standards deteriorated and, if so, what remedial measures should be taken to improve them" ? We have tried to answer this question with reference to the actual circumstances prevailing in the universities and to show how the quality of education could be improved in the various institutions.

We feel that our enquiry cannot be concluded without some reference to the role that Parliament has assigned to the University Grants Commission in the field of higher education for the maintenance and coordination of standards. The Commission is required under the U.G.C. Act 1956 "to take, in consultation with the universities and other bodies concerned, all such steps as it may think fit for the promotion and coordination of university education and for the determination and maintenance of standards of teaching, examination and research in universities." The Act empowers the Commission, *inter alia*, to enquire into the financial needs of the universities, to allocate and disburse grants for the maintenance and development of universities, to recommend to any university measures necessary for the improvement of its education and to advise the universities regarding the action to be taken for purposes of implementing such recommendations. Thus the University Grants Commission has two important functions to discharge. It has to determine and maintain standards of teaching, examination and research, and also to coordinate university education in the country.

What does maintenance and coordination of standards mean ? It has been suggested in some quarters that the Commission has to ensure that no university is allowed to fall below a certain minimum standard. We, however, feel that this interpretation does not go far enough. When we say that standards have to be maintained, we do not imply that any standards other than high standards are to be maintained. The statutory responsibility becomes rather meaningless if standards are understood to mean only minimum standards. In fact, the idea of a minimum or a maximum is not quite applicable to the university situation as it is generally related to measures of physical or material objects. A minimum or a maximum are, in other words, quantitative concepts. It would, therefore, appear that they are not very relevant to a consideration of academic excellence which is a qualitative concept. Academic excellence we think can be measured only in terms of the excellence already attained by institutions as understood by academic people. Even if we succeed in defining what

minimum standards signify, it has to be realised that in a rapidly growing world of knowledge, the unit of measurement itself undergoes constant change. Secondly, experience has shown that once the so-called minimum standards are laid down, a tendency is initiated to identify it in practice with the maximum and to maintain standards at this level.

Maintenance of standards, therefore, has to go hand in hand with coordination of standards. According to the dictionary, to coordinate means 'to equalise status' (Oxford) or 'to place or classify in the same order or rank' (Chambers). If so, it can be seen that the process of coordination involves an upward movement rather than a downward movement, as the endeavour is always directed to raise lower levels to a higher level. It is thus clear that the aim of the University Grants Commission should be to raise the levels of university education, firstly, to the highest standards obtaining in our own country; and, secondly, to raise the best attainable in our country to international standards. We think that such an approach has within it a self-sustaining dynamism of progress and improvement. We know that the University Grants Commission has addressed itself to this immense and difficult task and much has already been done. While it is true that in the expansive situation prevailing in the field of higher education in India the pursuit and realization of excellence cannot be a universal phenomenon, it is possible of attainment in limited areas, and our efforts have to be directed to extending the boundaries of these areas, as well as raising the heights of the peaks. The Commission's programmes therefore have both a horizontal and a vertical dimension and it is in the constant upward and outward moving of these limits that standards can be improved in the universities in India.

The function of coordinating university education has also other important aspects which have a far reaching significance for the growth of university education in India along sound lines. The fact that the business of coordination has been entrusted to a central agency, in spite of education being a state subject in India, is significant. It shows that there are certain issues which have to be considered in a wider context of educational planning and policy than could be done by the states within the framework of our federal constitution. This involves, in the first place, a proper coordination of educational facilities with the resources available for higher education. Given the financial and other resources, a central agency is in a better position to determine the areas which should be consolidated and strengthened and to indicate the directions in which further expansion may take place. A similar coordination has also to be brought about between university education and the developmental requirements of the country for personnel trained by universities to shoulder positions of responsibility in various areas. It is also necessary to avoid duplication of highly selective specialisations in order that the available material and academic amenities may be used to the best possible advantage and to bring about institutional co-operation among the universities, regionally and nationally, in respect of various facilities required for teaching and research.

We are aware that implementation of these suggestions may raise delicate questions in regard to the autonomy of universities. The University Grants Commission has, however, so far dealt with the problem with tact and wisdom. Steps for maintenance and coordination of standards have been taken by the Commission "in consultation" with the universities as required by the U.G.C. Act. But it is of the utmost importance that the Commission should exercise its legitimate powers effectively, if standards are to be maintained and improved. We envisage a further expansion and development of the Commission's academic programmes as an indispensable prerequisite for improvement of standards in the universities.

In view of the magnitude and importance of the problems which the Commission has to tackle, considerably larger funds than those made available to the U.G.C. so far, viz. Rs. 19 crores in the Second Plan and Rs. 37 crores in the Third Plan should be placed at the disposal of the Commission. With the funds available to it, the Commission has done a magnificent job, though it has not been possible adequately to deal with many of the requirements that have been indicated in our report. It is not enough if certain legal powers are given to the Commission to bring about promotion and coordination of university education and determination and maintenance of standards of teaching, examination and research in our universities. The powers provided cannot really be exercised in favour of these exacting objectives, if sufficient funds are not also given to the Commission to deal with the problems in a bold and imaginative way and thus play the effective role expected of it in this important and vital field. It may also be necessary to alter the present arrangement of dividing the available funds between the Centre on the one hand and the States on the other, if the national goals of higher education and research are to be accomplished with vigour and purposefulness. In the challenging context of our country's development, only such a plan is likely to succeed in removing the gross disparities and weaknesses that characterise our system of higher education and research.

A special place has to be given for postgraduate studies in the strategy of the University Grants Commission to bring about improvement of academic standards. In our view they represent an area in which changes and reforms could be introduced without running into the kind of difficulties that have to be faced in the undergraduate field. It is noteworthy, in this connection, that in spite of the rapid increase in numbers in the universities, postgraduate education is still confined to a limited area, as only about 6% of the student population are to be found here. While this position has to be improved for various purposes, in the developing situation in the country, as pointed out earlier, necessary expansion has to be carried out without doing injury to its quality. Proper selection of students and provision of requisite facilities will, therefore, have to be ensured. In fact, in the hands of the U.G.C. the postgraduate programme could be turned into a powerful instrument for raising the level of work

in the different sectors of higher education. An attempt should be made not only to lift up its prevailing level, but also to coordinate it to the level of international standards, as rapidly as possible. We think that with careful planning and organisation it is not beyond our scope and competence to achieve this objective in the near future. Sufficient funds will, however, have to be placed at the disposal of the universities and colleges for this purpose. The Central Government might consider whether the full cost of postgraduate studies, particularly in respect of development schemes, could not be met by it.

It is obvious that for bringing about improvements in various directions, as indicated in the report, our present outlay on education is inadequate. In order to undertake the various programmes and fulfil the necessary conditions, educational planning will have to be much more realistic and ambitious. Sometimes investment in education is opposed on the ground that it does not yield immediate returns. But this is a narrow view. All progressive countries now realise that education is fundamental to economic and industrial advance, and that it requires a large and increasing share of national resources. Education as an investment in human beings must receive a high priority for raising not only the intellectual and moral standards of the people, but also the level of productivity in the country. It is to be regretted that this truth has not been fully appreciated by our planners. It cannot be too much stressed that unless intellectual and spiritual resources are also harnessed to the mighty task of social and economic development, available material resources can neither be used to the maximum advantage nor in the most appropriate way. In a developing situation, educated manpower is perhaps more important than the physical conditions and factors of production. This is true for any country, but a varying emphasis on the different kinds and areas of education may be required, according to the level of economic development. Whereas in a country like U.S.A. all kinds of education play a constructive part in enhancing economic welfare, in countries which are not so developed, vocational education has a greater importance than general education.

Recent studies made by noted economists on the question of investment in higher education have pointed out the folly of developing countries devoting a large part of their scarce resources to general education. In their view, education in general Arts and Science subjects is being given in such countries to far too many students. This means that scarce resources, which countries like India can ill-afford, are being expended on a sector of education which is, by and large, of little value to the developmental programme of the country, when other sectors of education and training which are of direct benefit to the growth of the country are neglected. While we do not necessarily endorse these conclusions, we agree that economic factors should be taken fully into account when determining priorities in higher education.

So far, our investment in education has been of a low order. The total outlay provided for university education was Rs. 15.1 crores in the First Plan, Rs. 47 crores in the Second Plan and Rs. 82 crores during the Third Plan period. The following table indicates the percentage distribution of direct expenditure on universities and colleges by source of income :

	Universities		Colleges for General Education		Colleges for Professional Education		Colleges for Special Education	
	1951-52	59-60	51-52	59-60	51-52	59-60	51-52	59-60
Govt. Funds	42.9	44.4	36.4	37.6	71.3	70.7	54.7	57.4
Fees	36.4	35.3	53.6	50.8	21.7	20.9	11.4	16.5
Endowments	3.0	5.9	4.6	3.7	2.4	3.2	19.5	9.3
Other sources	17.7	14.4	5.4	7.9	4.6	5.2	14.4	16.8

It will be observed from the above that the pattern of distribution of expenditure has not changed substantially over eight years. Also colleges for professional and special education have received larger government grants as compared to general education. For colleges of general education the most important source of income has been fees and government grants constituted only a little more than 1/3rd of their total income.

The total expenditure on higher education in India as percentage of the net national product is about 0.6. This compares favourably with a large number of countries as brought out by the following table*, but it has to be noted that the national income in our country is very low.

		All expenditure as percentage of Gross National Product** Higher education	Public expenditure as percentage of Gross National Product.		Public expenditure on higher education as percentage of public expenditure on all education.
		(1)	(2)	(3)	(4)
<hr/>					
	Financial Year				
Great Britain	1959-60	0.7	4.0	0.6	15
	1962-63	0.9	4.8	0.8	18
Australia	1959-60	..	2.9	0.8	27
Canada	1960-61	0.8	3.9	0.5	12

* Robbins Committee's Report — Appendix V.

** Suitably comparable data under this head for 'all education' are not available.

		(1)	(2)	(3)	(4)
France	1960-61	0.3	3.4	0.3	8
Germany (F.R.)	1960-61	..	3.0	0.4	14
Netherlands	1960-61	..	4.4
New Zealand	1960-61	..	3.3	0.5	15
Sweden	1960-61	..	4.2	0.5	11
Switzerland	1961	0.4	..	0.4	..
U.S.A.	1960-61	1.1	..	0.8	..
U.S.S.R.	1959-60	..	4.4	0.8	17

It has also to be observed that the cost per student in India is very low. This is less than 1/15 of the cost per student in the United Kingdom of £777*. In most of the advanced countries the expenditure per student is almost the same as the per capita income of the country. In India although the cost per student is nearly twice the per capita income, it cannot be considered as satisfactory because the per capita income is itself very low. The following table gives the per capita cost for colleges of general education (Arts & Science), professional education (Engineering, Technology, Medicine etc.) and special education (Music and Fine Arts)

	1951-52	1954-55	55-56	56-57	57-58	58-59	59-60
Colleges for General Education.	233.1	222.3	222.9	224.7	234.3	244.7	266.0
Colleges for professional education.	821.1	747.3	745.6	726.8	710.4	800.2	758.3
Colleges for special education.	324.7	285.5	273.0	318.1	349.1	317.8	327.0

During the Third Plan period the average expenditure on Arts and Commerce students has been estimated at Rs. 300/- and for Science students at Rs. 375/- per capita as against Rs. 1200/- per capita for technological and engineering students. As pointed out in a recent paper prepared by Shri K.L. Joshi, Secretary, University Grants Commission, these figures include a large number of substandard colleges and other institutions, considering the position shown below of the expenditure per capita in certain selected colleges:

College	Overall per capita expenditure (recurring)	Staff student Ratio
Presidency College, Madras	769	1 : 9
Madras Christian College, Tambaram	521	1 : 11
St. Xavier's College, Bombay	408	1 : 22
Institute of Science, Bombay	1457	1 : 10
St. Stephen's College, Delhi	1010	1 : 14

* The average public current expenditure in 1962-63 per university student (excluding loan charges) was £568 in Arts, £774 in applied Science, £902 in pure Science and £1,061 in medical subjects. Report of the Committee on Higher Education under the Chairmanship of Lord Robbins—P. 201.

Even these figures are low compared to the per capita expenditure in very advanced countries like the U.K., U.S.A., U.S.S.R. and Germany. While expenditure of this order cannot be undertaken by a poor country like India, unless the present outlay on higher education is substantially increased, many of our institutions will not be able to rise above sub-standards.

The main problem facing the universities in India today is the maintenance of quality in the face of increasing numbers. The growth of numbers has inevitably diluted the present facilities in the form of staff, libraries, laboratories, class rooms, hostels etc., and also made intellectual contacts between the teachers and the taught less frequent. The growth of numbers would not have been as disconcerting as it actually is, but for the fact that probably half of the students who flock to the universities are unsuited or inadequately prepared for the education which is offered. This does not mean that such students are intellectually inferior. In fact, part of the problem is to identify their strong points and to divert them to such other kinds of training as would develop their potentialities. When this can be done—and there is no reason why this cannot be—two victories would have been won in the battle for standards. Firstly, it would bring into the university only those students who can benefit from the kind of education it offers. Secondly, our existing limited facilities could be used to much better advantage, as those who cannot benefit by them would have been eliminated by selective admission. A third gain would be that the diverted students could be given more suitable training and thus would have a better chance of developing into useful citizens.

It has also to be emphasised that unless the setting up of new universities is strictly controlled by the Central Government, no hope can be entertained of raising standards, as the increased resources we may be able to provide for higher education will be consumed by the new universities. As suggested elsewhere in the report,* we could meet the exigencies of the situation by setting up of university colleges or centres, which could be developed into universities in the fullness of time. In fact, we would go to the extent of suggesting that ordinarily all new universities could be made to pass through a period of gestation as university colleges or centres.

Another severe handicap from which our universities suffer in their efforts to raise standards is the paucity of good teachers. Actually no argument is required to show that if good students are absolutely essential for the improvement of standards, good teachers are equally necessary. The standards of the university or college are closely related to the competence of its teachers. Although there may be exceptions, it is a fact that the quality and scholarship of the students who pass out of the universities will be, to a large extent, related to the abilities of their teachers. Unless the best products of the universities are 'fed back' into the universities themselves, a continuous decline in standards is bound to set in. It is perhaps

true that only about one quarter of our teachers are of outstanding calibre and another quarter may be said to be reasonably good. The general impression one gets in the universities and colleges is that about half of the teachers are either of indifferent or poor quality. Non-university institutions and departments also carry away a number of our good teachers. In the circumstances, we cannot too much emphasise the need to deal with this problem in a bold and imaginative way, so that the tide is actually turned in favour of the universities. We have to take steps to attract and retain in the service of universities and colleges teachers of outstanding ability and also to make the inservice training programme a regular feature of university activity.

In the preceding pages, we have been trying to correlate the easily discernible defects in our university system with low standards. A factor which is often overlooked and which, in our opinion, is highly relevant to a consideration of this issue is the morale of our university teachers and students. The visits that we paid to various university and college centres have given us the impression that it is not very high. This is a matter which needs attention and calls for remedial measures. Unless teachers and students feel happy and are inspired to work harder in a devoted and dedicated way, however much we strive to improve the intellectual and physical components of education, the best results cannot be obtained. Some sociological treatises have already appeared on the subject of student discipline, including a fine report on the subject by a committee of the University Grants Commission. No scientific study has, however, yet been made of the condition of the teachers.

We have referred to this situation in our report, in order that some attempts may be made in our universities to remove the causes of discontent. While improvement of conditions of service, welfare amenities, full appreciation of merit etc., would go a long way to raise morale, concerted efforts have also to be made for promoting among teachers and students a sense of pride in the university and *esprit de corps*. The fragmentation of knowledge which results from increasingly narrower specialisation necessarily brings in its wake isolation of academic groups. Some attention, therefore, will have to be given to foster within universities what may be called, for want of a better word, an emotional integration of the university community and strengthening of social and personal relationships. This will also aid intellectual conversation between teachers of different disciplines and thus generate new dimensions of cooperation in the field of teaching and research.

Sd/-	S. Govindarajulu	Chairman
,,	A.C. Joshi	Member
,,	G.D. Parikh	,,
,,	G.C. Bannerjee	,,
,,	R.M. Roy	,,
,,	R.C. Majumdar	,,

„	George Kuriyan	<i>Member</i>
„	A.B. Lal	„
„	T.K.N. Menon	„
„	G.L. Datta	„
„	H.J. Taylor	„
„	T.M. Advani	„
„	A.K. Das Gupta	„
„	P.J. Philip	<i>Member-Secretary</i>

SUMMARY AND MAIN RECOMMENDATIONS

The Standards Committee was appointed by the University Grants Commission to make a systematic and objective assessment of standards of university education and to suggest various measures of improvement. In addition to using the questionnaire method the committee visited a number of university centres in India and held discussions with vice-chancellors, educationists, teachers and students. The main conclusions and resulting recommendations of the committee are summarised below.

I Aims of University Education in India

1. Recent developments in the economic, social and political spheres in the country call for a re-appraisal of the functions of the Indian university. In the context of the far reaching economic and social changes taking place in India, universities should lay much greater stress on development oriented education.
2. The pursuit of liberal values should however be a perennial activity of every university, irrespective of its courses of study. Even in institutions which are primarily concerned with training in professional skills the inculcation of these values has to be promoted.
3. The preservation and communication of existing knowledge is an important function of the university. It is, however, essential to transform teaching from routine instruction to acquisition of knowledge by bringing about a living contact between students and teachers.
4. The university has also to advance the frontiers of knowledge. This has, however, to be done in combination with teaching. Experience has shown that these two activities communicate strength to each other and flourish in combination.
5. While many Indian universities encourage the study of subjects like Indian languages, Indian history, Indian philosophy etc., they have, on the whole, failed to create a modern intellectual tradition of their own. Apart from imparting to their students an understanding of India's cultural heritage, universities in India should try to develop in them a modern Indian outlook. This requires a reinterpretation and adaptation of our traditional values in the context of the contemporary situation.
6. Universities in developing countries like India have firstly to ensure that they reflect and respond to the life of the people living around them. It is mainly through the intellectual

and moral leadership of our universities that a tradition-bound and stagnant society is to be transformed into a modern and progressive community. It should be considered obligatory on the part of the university to make an intensive study of problems faced by its neighbourhood as well as by the nation. Universities are expected to influence the thinking and planning activities of the government and other bodies.

7. A national outlook and purpose has also to be cultivated in our universities by a deliberate pursuit of national ends in preference to local interests. Universities as national institutions should devote themselves to a study of this problem in all its aspects.

II Evaluation of Standards

8. For a variety of reasons, a categorical answer cannot be given to the question whether standards have deteriorated during the last 10 or 15 years. Standards are said to have declined from the point of view of examination results as also with reference to the expectations entertained by employing agencies and the general public.
9. It is a fact that courses of study in many universities are not related to well-defined educational objectives. The conditions under which teaching and learning are carried on are also far from congenial.
10. The general opinion, however, seems to be that while the quality of the best students is as good as ever, the average product of an Indian university does not compare favourably with his counterpart in some of the well-known universities in the world.
11. On the other hand, it has to be recognised that many of our scholars and scientists have done outstanding work and that the various schemes of national development have been implemented by personnel trained in our universities.
12. Further, the various steps taken by the University Grants Commission have made a definite contribution to improvement of facilities in the universities and colleges. It is, however, necessary to point out that the resources placed at the disposal of the Commission have been far from adequate to deal effectively with this problem.

III Admission Policy

13. In the interest of standards, it is of the utmost importance to adopt a bold and imaginative policy in respect of admission of students to university courses. Current practices lead to a

- great many students, who are neither emotionally nor intellectually prepared for higher education, entering the universities.
14. There are several ways in which a more careful selection of students could be made such as approving only such students as have secured a fairly high percentage of marks at the school examinations or special weightage being given to marks in important subjects like languages and mathematics. A consideration of their cumulative record at school or a *viva voce* or written test is also desirable. Each university will have to identify by investigation over a number of years the particular method or combination of methods which is likely to yield the best results.
 15. We should provide for alternative training programmes for those who are not admitted to the universities but possess the necessary aptitude for vocational training. Existing facilities in this regard need further expansion and improvement.
 16. The school system should contain a number of terminal points from which students could be diverted to technical and vocational courses and removed from the passage to the university.
 17. Another solution consists in a large scale expansion of facilities for correspondence courses, part-time courses etc. It will also be desirable to institute two streams of undergraduate education—a pass as well as an honours. Admission to the honours course will have to be limited to the intellectually abler students, with provision for shifting students from the pass to the honours courses and *vice versa* according to their aptitude and ability.
 18. Some have commended the setting up of central institutions of higher education in different parts of the country, where admissions could be strictly controlled and based exclusively on merit.
 19. Universities should agree on the minimum age for entrance to the degree course. It would be desirable to have 17 plus as the minimum age but as a first step, a minimum of 16 plus may be prescribed.
 20. Universities should also agree on the core subjects required for admission to degree courses. All students who aspire to enter the university should have an adequate grounding in Science, mathematics, history and geography, apart from languages. Universities should further demand a fairly high standard of English for entrants.

IV Courses of Study

21. The problem of formulating suitable courses of study in Indian universities has to be judged in the light of the rapid advances

being made in the field of knowledge, particularly in Science and Technology. The general impression one gets is that, except in a few universities, no serious attempt is made to evaluate syllabuses in the light of modern developments. Universities should devote themselves more assiduously to a definition of what is expected of students at particular points of their education.

22. There are several reasons why courses of study have not been rationalised and modernised in our universities. One reason is that the procedure of revision is at present complicated and cumbersome. There is also a lack of competent teachers for imparting instruction in the new areas. Sometimes the universities do not have the required equipment and physical amenities for carrying out reforms.
23. It is necessary to make the Boards of Study solely responsible for formulation and modification of syllabi. The boards should include a number of younger teachers who are acquainted with the latest developments in the concerned areas.
24. The reports of the Review Committees appointed by the University Grants Commission to examine courses of study in different disciplines give valuable guidance in this direction and full advantage should be taken of the recommendations made by them. Such reviews should also be undertaken periodically.
25. The University Grants Commission should explore the possibility of instituting standing review committees for continual study of university courses in the light of modern developments in the respective fields.
26. The universities may also appoint review committees periodically to carry out a critical evaluation of their courses.
27. There should be a regular programme of seminars and conferences of teachers in different subjects for considering issues relating to objectives of teaching, content of courses, organisation of research, teaching methods etc.
28. It may be desirable to make permanent arrangements for year-round refresher courses and seminars to which teachers may be exposed for short periods in groups.
29. The centres of advanced study, set up by the University Grants Commission, should have an extension section for offering facilities of refresher courses and research to selected teachers from universities and colleges.
30. It is necessary to have a built in device in every university to look after the maintenance and improvement of standards of courses of study.

V Undergraduate Education

31. All universities in India with the exception of the University of Bombay and the 4 State Universities in U.P. have accepted the three-year degree course pattern but many of the conditions essential for its implementation have not been fulfilled.
32. In recent years there is a general agreement on the total duration of school and university education being 15 years. Most of the members of the committee support this proposal. It is, however, necessary to ensure that the new pattern is harnessed to conditions which are conducive to a refinement of both school and collegiate education.
33. The period of 15 years may be split up in a convenient way. It does not seem possible to have a 12-year school education except in exceptionally good schools. The pattern of having 10 years of school education followed by 2 years in an intermediate or junior college and 3 years in a degree college deserves serious consideration. The junior college could provide an opportunity to a large number of students to acquire a university degree without having to proceed further, besides being a point for dispersal to vocational and technical courses.
34. The pre-university course needs to be reorganised, keeping in view the capacity of students as also the need for giving them an adequate grounding for higher studies. Special attention should be directed to the teaching of English in the pre-university course.
35. There is a considerable lack of uniformity in regard to the honours courses in the universities. While we should make provision for a variety of courses and combination of subjects to suit different kinds and degrees of ability, it is essential to have a clear idea of their specific objectives. The honours course should aim at greater specialisation on the basis of which the student could proceed to postgraduate studies.
36. The idea of "general education", interpreted imaginatively and in a flexible way, could serve as a rational principle of reorganisation of undergraduate education to make it more balanced and appropriate to the intellectual and spiritual needs of students in the modern world.

VI Postgraduate Studies and Research

37. In recent years there has been a rapid expansion of postgraduate studies in the Indian universities. It is a matter for satisfaction that, by and large, results at the postgraduate level are qualitatively as well as quantitatively superior to

those at the undergraduate level. But a great need exists for strengthening and consolidating these gains to make them comparable to the best international standards.

38. The chief aim of postgraduate education should be the acquisition of specialised knowledge. The courses should produce competent scholars and scientists for employment mainly in the learned professions.
39. Universities do not seem to be careful in permitting colleges to start postgraduate studies. Postgraduate colleges should be allowed to come into existence only if they fulfil requisite stringent conditions, particularly in respect of research.
40. The proper method of developing postgraduate education in the colleges is to organise it in places where at least 3 to 4 good colleges may pool their resources in equipment and teaching personnel. Universities should also appoint some professors and readers, who could visit these colleges and deliver lectures.
41. It would be desirable to lay down that universities should consult a body like the University Grants Commission before postgraduate colleges are started. This will also enable them to resist local pressures and have at their disposal the advice of an expert body in the matter.
42. Though the research activities of the universities have gained considerable momentum in recent years, much more remains to be done in this regard. While it is true that a good deal of research is being done by institutions and organisations outside the universities, it is in the universities that research can grow in a natural way.
43. A greater coordination between the departments of different universities in the matter of research programmes seems desirable.
44. Universities should also make use of the research facilities available in institutions outside the university, e.g. in national laboratories, as in a country like our's research resources are scarce and should be made the best use of.
45. There seems to be a tendency in some universities to register candidates without due attention being paid to their research aptitudes. It is also doubtful whether the research degree committee in the university has sufficient time to consider the large number of applications placed before it. The chief responsibility for acceptance or refusal of research candidates should belong to the professor/supervisor.

46. Research students should be admitted only provisionally, to begin with, their confirmation being related to good work. They should be introduced to the methodology of research and asked to prepare a bibliography and read widely.
47. Universities should ensure careful supervision of research work. The practice prevailing in some departments of permitting 8 to 10 candidates to register under one professor should be discontinued.
48. Theses should be referred only to competent scholars in the field. The candidate should also be given a *viva voce* test with a view to finding out more about his suitability for award of the doctorate degree.
49. It would be desirable to introduce an intermediary degree viz., M.A./M.Sc. by research, especially in the languages, in order that standards of the Ph.D. may be maintained at a high level.
50. Teachers should be given necessary facilities for quiet reading, writing and research. It may be desirable for universities to give due consideration to the research work done by teachers before they are confirmed or promoted.

VII Science Education

51. Science education in India has grown fairly rapidly during the past four or five decades. The proportion of Science students to the total enrolment in the Indian universities compares favourably with a large number of countries but the same cannot be said about the number of students enrolled in the professional faculties.
52. The resources available to the universities for the development of Science departments have not been commensurate with their requirements, considering the great need for improving standards of Science education in the country.
53. There are several factors which have adversely affected the standards of Science education. Although the quality of Science teaching has not declined at the higher levels and it has probably improved, it cannot be claimed that instruction is satisfactory in the case of a large majority of students.
54. Standards of Science teaching should be improved at the school level in order to provide adequate foundation for upgrading standards at the university level. Science text books for schools should be written by top scientists in the universities. It is also necessary to ensure that Science is taught at the school level by first-rate teachers.

55. The programme undertaken by the University Grants Commission of organizing summer institutes for improving the teaching of Science in schools needs considerable expansion.
56. Students with scientific potentialities should be identified sufficiently early and given special attention and care.
57. Students for Science courses in the universities should be selected very carefully, with particular emphasis on their mathematical ability and capacity to do practical laboratory work.
58. In view of the rapid advance of scientific knowledge in recent years, it is of the utmost importance that courses of study in different Science subjects should be reviewed from time to time and made up-to-date. Requisite facilities by way of laboratories, equipment etc., should be provided to enable universities to introduce modern techniques in teaching Science.
59. It is desirable to provide more diversity in the selection of subjects both at the undergraduate and postgraduate levels. There should be far greater communication between Science subjects which are closely related.
60. Universities should also encourage students to build up their own apparatus and to improvise methods of their own to develop far greater skill and insight into practical work.
61. It is understood that in some departments very little work is being done with the equipment available to them. In such cases, equipment should be transferred to other departments where it can be used more effectively.
62. Although the government has taken several steps for encouraging scientific research in the country, provision for research and development appears to be highly inadequate. Apart from difficulties such as foreign exchange, laboratory facilities, books etc., there is also a shortage of well-qualified personnel.
63. Indian scientists working abroad should be offered congenial conditions of work and encouraged to return to the country.
64. It is important to recognize the international aspects of Science and to explore the possibilities of fruitful collaboration between Indian universities and universities abroad. Full advantage should be taken of the assistance available under various foreign aid programmes, particularly at the level of research.
65. Information about scientific careers and opportunities should be disseminated widely to impress upon promising young people in the universities the attractive rewards which Science offers in the developing situation of our country.

VIII Improvement of Teaching

66. Conditions in which teaching and learning are carried on in the Indian universities and colleges are unsatisfactory. This is largely due to the enormous expansion of numbers which has diluted the available resources such as staff, libraries, etc.
67. Very little attempt is made in Indian universities to involve the students in the learning process through direct contact with the mind of the teacher. The emphasis is mainly on lecturing, which is not supplemented by other recognized methods of instruction.
68. The dictation of notes in university classes should be discouraged as it develops a tendency among students to rely on guide books, bazar notes etc., and encourages memorisation. It will however be useful if the teacher prepares a synopsis of his lectures containing carefully selected bibliography and makes it available to the students for their guidance.
69. Students should be persuaded to take part in academic discussions. Some time should be left at the end of each lecture period for questions.
70. Encouragement should be given to students to go to the library, select books and read for themselves. One method of doing this would be to insist upon more written assignments and tutorials during the course of the year.
71. Tutorials should have an important place for writing. The size of the tutorials should be kept reasonably small. It may not be possible to provide separate tutorials for each subject, but with the limited staff available, every student could be given at least one tutorial per week.
72. At the postgraduate level, tutorials should be supplemented by seminars. Postgraduate students should be encouraged to do independent thinking and to take part in group discussions of an inter-disciplinary nature.
73. The generally prevailing idea that lectures should "cover" the syllabus must be given up. Syllabuses could also be broken up into suitable parts, each part being dealt with by different teachers.
74. An attempt should be made to select more promising students and give them better facilities in the laboratories and libraries, instead of dealing with all students alike.
75. Universities are facing an acute shortage of good teachers. Conditions have, therefore, to be created for attracting and retaining in the teaching profession the services of well-qualified people.

76. Salaries paid in the universities should be comparable to those in the National Laboratories, Institutes of Technology etc., which at present are higher. No further revision of salaries in the allied sectors should take place without due consultation with the University Grants Commission.
77. Salaries of college teachers are very low and it has not been possible for a number of colleges to introduce even the Second Plan scales of pay recommended by the Commission. The existing gap in the salaries of teachers in the affiliated colleges and those obtaining in the university departments should be narrowed.
78. There is an urgent need to make the rules for provident fund or pension benefits, health services etc., as attractive as those prevailing in the administrative and other sectors.
79. Apart from increasing residential accommodation in the university and college campuses, the possibility of making loans available to teachers on easy terms for building houses in the vicinity of the campuses should be considered.
80. University rules should provide for 'sabbatical leave' for study and research by teachers. The leave should be provided for professional work and confined to deserving cases only.
81. The right of universities to appoint their own teachers should be preserved and protected. Universities on the other hand should act with a high sense of responsibility as cases are not uncommon of considerations other than academic merit being brought to bear upon the appointment of teachers.
82. It would be desirable to lay down fairly well-defined qualifications for teachers of different categories for the guidance of selection committees.
83. It would be of great advantage to appoint one or two experts from universities on the selection committees of colleges.
84. University teachers should have some orientation in the techniques of teaching. They should also be frequently brought together at refresher courses, summer schools, seminars etc. for exchange of ideas and modernisation.
85. Teaching aids like radio, television, teaching machines, films, tape recorders and so on can be used with great advantage by Indian universities and colleges. It would be necessary for a central agency like the U.G.C. to collect and communicate to the universities and colleges information about such equipment and also periodically to organise exhibitions at suitable centres in regard to their uses.

IX Medium of Instruction

86. By and large, English continues to be the chief medium of instruction of university education. Some universities have however changed over to Hindi or a regional language at particular stages or permit their use in examinations. It is doubtful whether these changes have been brought about after necessary deliberation and assessment of facilities.
87. Change-over to the regional language as the medium of instruction at the university stage requires careful preparation as the area of pertinent knowledge to be covered is large and the technology of acquiring knowledge in the universities differs widely from the one used in schools. Unless an Indian language has grown upto its full academic stature, it would be unwise to introduce it as the medium of instruction at the university stage.
88. Before any change-over is brought about, universities must satisfy themselves about the competence of teachers to teach in the language concerned and about the availability of sufficient number of good books.
89. Where the medium of instruction changes from the school to the university stage or from the undergraduate to the post-graduate level, it has to be ensured that students do not suffer from it.
90. It would be desirable to undertake some experimental studies concerning the relative performance of students who study through the English medium and others. It is claimed that at present the best students elect English as their medium and that their standards are also higher.
91. Even when the medium of instruction is changed to a regional language, it would be necessary to provide for imparting adequate knowledge of English, for English is a great integrating factor, both for unity in India and for access to world literature especially in Science, Technology etc. English will also be helpful as a common link for inter-university communications not only within India but also between India and other countries.
92. The teaching of English should begin sufficiently early at the school stage. Special methods which have been evolved recently for teaching English as a foreign language should be widely introduced in our institutions. Teachers of English should also be given special training at such places as the Central Institute of English at Hyderabad.

93. Summer schools and refresher courses should be organized on a large scale for teachers of English and use should be made of equipment specially designed for language teaching.

X Examination Reform

94. Examinations have many important functions to perform, such as measurement of the student's competence and his suitability for employment or continuation of studies, etc.
95. The present examination system in Indian universities lacks sufficient reliability and validity and has come in for much adverse criticism in recent years.
96. The aim should be to remove the sources of error in the present method rather than to replace it by some other method which may prove to be equally unsatisfactory. There should, in fact, be a combination of different methods of evaluation as well as the objective and written types of examination.
97. The main difficulty in regard to internal evaluation has been that in some of the affiliated colleges attempts are sometimes made to raise the value of the sessional work with a view to improving the position of their candidates in the final examination. Internal marks should therefore be scaled to the same mean and standard deviation for each college. Another way of making internal assessment more reliable will be to award to each student along with his university diploma, a separate record of the internal tests and other relevant information without adding these marks to the score in the final examination. Yet another alternative would be to confine internal assessment to objective tests, which are easy to administer and quick to score.
98. Universities should also arrange convenient spacing of examinations. The system of holding a final comprehensive examination has become out-dated in view of the rapidly growing content of knowledge which has considerably heightened the burden of the student.
99. The question papers set at university examinations have a number of defects such as poor sampling of content, ambiguity and lack of standard answers. Paper setters do not devote sufficient time to the framing of questions. Every paper should be related to such educational objectives as recall of knowledge, comprehension, application, analysis, synthesis and evaluation. It should also define the direction and scope of the answers desired. The paper setters should prepare a tentative outline of answers to ensure uniformity in evaluation.

100. Marks in different subjects should be scaled to a common mean and standard deviation before they are combined. Results should also be moderated with reference to approved statistical procedures of the kind outlined in the U.G.C. publication: "Three Studies in Examination Technique."
101. Earnest attempts should be made by universities to reduce the time consumed by examinations. Use may be made of mechanical aids for purposes of tabulation and analysis of marks. Universities should also lay down clearly the maximum number of answer books that a teacher may examine during a year, either from his own university or from outside.

XI Colleges

102. Colleges occupy a pivotal position in the present day pattern of higher education in India. The fact that nearly 85% of students are enrolled in the colleges and that they have 83% of the total number of teachers in the universities, is significant. It shows that standards cannot be improved without raising the quality of collegiate education.
103. The assistance so far made available by the University Grants Commission for providing facilities for affiliated colleges has not been adequate.
104. Even government colleges and missionary colleges which were noted for their high standards in the past are finding it difficult to maintain them under the present conditions. In a community of colleges weaker colleges have a tendency to pull down standards in the better institutions.
105. Colleges are allowed to be set up these days under the influence of political pressure, regional rivalry, parochial sentiments etc. This situation calls for regulative control. A number of colleges in India do not have adequate enrolment, with the result that they cannot be considered viable economic or intellectual units. Before new colleges are started, due consideration should be given to the existence of such institutions and attempt should be made to explore the possibility of utilising them to the fullest extent.
106. There should be a reasonably uniform system of granting affiliation to colleges all over the country. The norms and conditions formulated by the College Committee of the U.G.C. in regard to staff requirements and physical and other facilities should be strictly adhered to. The power of granting affiliation should vest in the university and there should not be any interference or perssure from government or any other agency in this matter.

107. Efforts should be made to bring universities and colleges closer together and the universities should concern themselves more actively with collegiate education.
108. A certain number of good colleges should be given an "autonomous" status to experiment with new techniques of teaching, courses of study, internal examinations etc. Special assistance should also be made available to selected colleges for the pursuit of excellence.
109. A number of outstanding colleges all over the country should be chosen for treatment in the same way as 'centres of advanced study' are in respect of postgraduate teaching and research.
110. The possibility of every university setting up a college or 'centre' under its own auspices to serve as a "pace-setter" for other colleges should be explored. Such colleges can in turn grow into full-fledged universities in due course.
111. The system of government meeting 90% of the deficit of the constituent colleges of Delhi University should be extended to other colleges also. Instead of determining grants on an *ad hoc* basis, there should be a grant-in-aid code to regulate financial assistance to colleges.
112. Colleges should organize extension lectures by distinguished scholars and scientists from the university and outside to expose their students and teachers to the influence of experts in their respective fields.

XII Organisation of the University

113. Universities should have a high degree of autonomy. They should have the freedom to choose their students, to appoint their staff, to organise their courses of study etc.
114. Universities in India enjoy freedom in many of these matters, but there are occasions when its exercise is threatened. Some of the methods now employed in the election or selection of vice-chancellors, for example, impinge on the autonomy of universities.
115. The vice-chancellor should be an able and academically-minded person, preferably with a record of teaching and research. He should be given full authority and facilities to discharge his duties in an efficient way.
116. There is no inherent conflict between the principle of accountability and the idea of autonomy. State Governments should follow the example and procedures initiated by the University Grants Commission in dealing with the universities.

117. While universities should enjoy autonomy in academic matters to the fullest extent, they should on their part be fully alive to and aware of their social obligation in respect of training leaders and administrators in various walks of life.
118. Participation of lay-men in the legislative and administrative organs of the university may be desirable, but in no case, should they be allowed to become a hampering factor in the performance of academic activities. The Senate and the Syndicate should be concerned mainly with administration and academic programmes should be left, by and large, to academic men.
119. The constitutions of our universities which were modelled to suit different circumstances are not suitable for the present conditions which require quick action and efficiency. An attempt should be made to get rid of large and cumbersome bodies and also to do away with unnecessary administration.
120. There should be a Board of Undergraduate Education and parallel to it, a Board of Postgraduate Education. The boards might jointly constitute the Academic Council, or operate under it, but should have sufficient authority to organize the work of the university in their respective spheres.
121. There is an urgent need for streamlining the present methods of administration involving such procedures as filling up of unnecessary forms, maintenance of useless records etc.
122. Many heads of departments, specially in Science subjects, have so much routine work to do that they have practically no time left to devote themselves to study and research. The possibility of dividing administrative work over as many members of the department as possible should be explored.

XIII Maintenance and Coordination of Standards

123. In pursuance of the functions entrusted to the University Grants Commission under the U.G.C. Act of 1956, the aim of the Commission is to raise the levels of university education; firstly to the highest standards obtaining in our own country and; secondly to raise the best attainable in our country to international standards.
124. Although, education is a state subject in India, the function of the University Grants Commission to coordinate university education signifies that issues have to be judged in a wider context and a proper coordination of university education brought about with resources as well as requirements.
125. The Commission would also be able to organise development and strengthening of academic facilities among universities on

a regional basis to ensure optimum utilization of material and personnel resources particularly in respect of highly specialized subjects.

126. The University Grants Commission has dealt with the problem of university autonomy with great tact and wisdom. The Commission has to continue to provide effective leadership to the universities in the sphere of standards. The legal powers of the Commission in this behalf cannot, however, be exercised to the fullest extent and with beneficial results unless resources are made available to the Commission on a scale much higher than has been the case hitherto.
127. The academic activities of the University Grants Commission such as the holding of seminars and conferences, appointment of review committees, setting up of centres of advanced study etc., need to be strengthened further.
128. While expenditure of an order undertaken by advanced countries may not either be applicable or possible in India, unless the present outlay on higher education as also the cost per student is sufficiently increased, many of our institutions will not be able to rise above sub-standards.
129. In India education in general Arts and Science subjects is being given to far too many students. It would be necessary to pay particular attention to and expand those sectors of education, which are of more direct value to the developmental programme of the country.
130. A strict control should be exercised by the Central Government on the establishment of new universities by State Governments.
131. Concerted efforts have to be made for promoting among teachers and students a sense of pride in the university as also for raising their morale and bringing into being a truly academic community.

Appendices

APPENDIX 1

QUESTIONNAIRE RELATING TO STANDARDS OF UNIVERSITY EDUCATION

PART I—GENERAL

1. What, in your opinion, are the educational goals a university/college should strive to achieve? In what ways can these goals be realised? Please state your views in the form of a brief note, with special reference to the interests you represent.

2. Have standards of university education deteriorated during the last 15 years? State reasons for holding the view that :

(a) standards have not deteriorated, and

(b) standards have deteriorated

If (b), in what respects have standards deteriorated?

3. To improve standards what action, if any, is called for in respect of:

(a) admission to various courses;

(b) content of courses of study;

(c) teaching techniques;

(d) facilities for research work;

(e) medium of instruction;

(f) examination system;

(g) pre-university course;

(h) three-year degree course;

(i) honours course;

(j) postgraduate course;

(k) qualifications and conditions of service of teachers;

(l) work by teachers;

(m) conditions of affiliation and supervision of colleges;

(n) teacher pupil ratio faculty-wise;

(o) student indiscipline;

(p) residential facilities for teachers and students;

(q) physical facilities;

(r) extra-curricular activities;

(s) library;

(t) laboratories;

(u) administration;

(v) finance.

APPENDIX 2

QUESTIONNAIRE RELATING TO STANDARDS OF UNIVERSITY EDUCATION

PART II

(a) Admission to various courses

1. (a) What are the present requirements of admission for the various university courses (pre-university, B.A., B.Sc., M.A., M.Sc., and professional courses) ?
(b) Are any changes in this regard contemplated by your university? If so, what modifications are considered necessary?
2. Is the examination which entitles students to seek admission to a university, a satisfactory test of their fitness for a university course?
3. There are different entrance qualifications in different universities, for example, matriculation or high school examination is the qualification in some, in others, intermediate, and in some, higher secondary certificates.
(i) Which of these do you prefer and why?
(ii) Do you advocate uniformity in this regard in the whole of India ?
Would you advocate any additional and special tests for admission to the university?
4. What is the age of admission to the first year class of your university? What, in your opinion, should be the admission age, minimum and maximum?
5. What are the minimum eligibility requirements for admission to various courses in your university/college (e.g. marks in the subject, aggregate etc.) ?
6. (a) Has your university prescribed any ceilings for admission to its teaching departments and colleges? What are the ceilings for postgraduate and undergraduate classes accepted by the university/college ?
(b) Please give department-wise information regarding (i) the total number of students and (ii) areas of class-rooms, lecture-halls etc. (separately if possible).
7. Does the university/college find it difficult to reduce numbers? If so, the difficulties may be indicated.

8. At what rate has the admission increased in different subjects during the last five years at the undergraduate, postgraduate and research levels in your university/college?

(b) Courses of Study

1. Are any attempts made in your university to compare courses from time to time with corresponding courses in advanced institutions ?
2. What is the composition of the bodies which are concerned with the drawing up of syllabuses in different subjects in your university ?
3. If there are Boards of Studies, please give a list of the members of such Boards with their qualifications and designations.
4. How are Boards of Studies constituted in your university? Do you suggest any modification in this procedure?

(c) Teaching Techniques

1. Does the university/college make use of any methods other than lectures for instruction of the students? If so, what are the methods used? What is the part played by each method in your university/college?
2. What is the time allotted per week for lectures, tutorials, and seminars for various subjects at the undergraduate and postgraduate levels in your university/college?
3. How large are lecture classes, tutorial classes and seminars in your university/college?
4. Are tutorials held during the usual working hours or at other times ?
5. Indicate the categories of teachers who participate in lectures, tutorials, seminars and laboratory work as under :

	Lectures	Tutorials	Seminars	Laboratory work
	1	2	3	4

Professors

Readers

Lecturers

Demonstrators/Tutors/
Instructors

Is any modification of the present system of allocation of work considered necessary?

(d) Research Activities

1. What courses (degrees) are provided in your university in different subjects (M. Litt., M.Sc., L.L.M., Ph.D., D. Litt., D.Sc., etc.) ?
2. Does your university award the Master's degree on the basis of research alone or written examinations alone or on a combination of the two ? Please indicate the existing pattern in regard to each subject.
3. What are the minimum qualifications prescribed for admission to the doctorate course ?
4. What standards (specifications such as discovery of new facts, fresh interpretation of existing facts or theories, advancement of knowledge, capacity for critical judgement, literary presentation etc.) are expected of candidates qualifying for research degrees ?
5. Is knowledge of any foreign language required for undertaking research for the Master's or doctorate degrees?
6. Is any special course in methodology of research provided for candidates for the doctorate degrees?
7. What is the nature of the supervision given by the university for research students? Is there any limit on the number of students to be supervised by a teacher?
8. State briefly the procedure for admission of students to research courses, particularly the agencies (Research Boards of Studies, recognized teachers of the subjects, Academic Council, etc.) which have to approve the admissions.
9. Is a *viva-voce* compulsory for research examinations ?
10. How many examiners are appointed for evaluating research theses? Is the supervisor one of them? On what principle is decision taken in regard to the award of a research degree?
11. State the number of teachers engaged in guiding the research work of students and their academic qualifications as on 31st March, 1961.
12. Is any special remuneration paid for guiding the research work of students in your university/college?
13. Give a list of the research theses approved for doctorate degrees during the last five years in different subjects and the names of the examiners who evaluated them.

(e) Medium of Instruction

1. What media of instruction are used in your university/college for the pre-university, Bachelor's degree, and Master's degree courses?

2. If there are more than one medium, is the university/college satisfied with this arrangement? If not, what are the difficulties in the way of efficient teaching at various levels under this system ?
3. If the medium of instruction of the university/college is the regional or any other language, is the university/college satisfied with (a) the competence of teachers to teach in the medium accepted by the university, (b) the number of available books in the library in the language concerned and (c) the ability of students to learn through the language?
4. Are the media of teaching and examinations same? If not, has the university/college experienced any difficulty in this regard?
5. Do you think that any special course in the English language is needed to enable students to read and understand the prescribed courses?

(f) Examination System

1. What are the different types of examinations used by your university for various courses of study?
2. How are the examinations arranged during the period of study for the different courses?
3. How are paper setters appointed by the university? Are the questions set by them moderated before they are finalised?
4. Are any directions given to the paper setters before they undertake the work of setting papers regarding the standard aimed at by the university in various subjects?
5. Do you allot any marks for sessional work by students during the period of study? Have you introduced any system of cumulative records which are taken into consideration in the final evaluation of the students' work? In what manner if at all are they taken into account for the university examinations?
6. Has the university laid down any rules in regard to the appointment of examiners and their qualifications? If so, please give details.
7. Has the university laid down any rules regarding the number of answer papers that may be marked by an examiner in a year or in regard to the maximum remuneration that may be received by him from any one source/from all sources?
8. Does the university appoint head examiners for different subjects under whose direction marking of papers is to be carried out by other examiners? If so, please describe the arrangement.

9. Does the university define the spread of marks for the guidance of the examiners? If the answer is in the affirmative please indicate how this is done?
10. Are any methods adopted for ensuring that the marks awarded by different examiners in a subject approximate to a common standard of evaluation?
11. Has the university a separate section for the conduct of examinations? Does this section undertake any research into the system of examinations in the university with a view to improving it?
12. How are the results classified by the university? What are the principles on the basis of which the results are classified?
13. Are results moderated before they are published? If so, how?
14. (a) Do you hold any examination in parts? If so, please give details and indicate the advantages in doing so. How is the final result of different courses determined on this basis?
(b) Do you have uniform system for all courses or does it vary from course to course? Please give details.
15. What is the proportion of external examiners in each subject at the postgraduate and undergraduate examinations?
16. What new evaluation techniques (including internal assessment) have been adopted by the university during the last 15 years and with what results?
17. Please give below details of the examination results for various courses during the last 15 years as indicated below :

Name of Examination	Number Appeared	Number passed	First class	Second class	Third class
I.A.					
I. Sc.					
I. Com.					
P.U.C.					
B.A.					
B.Sc.					
B. Com.					
M.A.					
M.Sc.					
M. Com.					
Ph.D., D. Litt.,					
D.Sc. etc.					

(g) Pre-University Course

1. What is the estimate of the university/college of the suitability of students who are admitted to its pre-university course? If the standards are not satisfactory, has the university/college taken any steps to improve them?
2. Does the university/college hold any test for admission of students to the pre-university course?
3. Is there any provision for tutorial work in your university/college for pre-university classes? If so, a brief account of the nature of the work done in these classes may be given.
4. What is the size of the pre-university class in your university/college?

(h) Three-Year Degree Course

1. Has your university introduced the three-year degree course? If so, when was this done?
2. Has the three-year degree course brought about any improvement in undergraduate education in your university? If so, please state them.
3. How many university examinations are held during the three-year degree course?

(i) Honours Course

1. Do you have an honours course, or a corresponding course in your university/college? If so, in what subjects? Please indicate the number of students admitted to the honours course in different subjects during the last 3 years.
2. Do you have the same entrance qualifications for honours students as for pass students? If honours students are required to show special proficiency, an explanatory note may be attached about it.
3. What is the duration of the honours course in your university?
4. In what ways do the honours courses differ from the pass courses in regard to the papers taught, methods of instruction, examinations etc.
5. Is any distinction made in arranging lectures, tutorials and seminars as between pass and honours courses?
6. Do you have a separate staff for teaching honours classes or a composite staff for pass and honours?

(j) Postgraduate Courses

1. Is the postgraduate teaching in your university concentrated at the headquarters or is it conducted in affiliated/constituent colleges or divided between the headquarters and the colleges?

2. Has the university laid down any special qualifications for teachers doing postgraduate work?
3. (a) Give the names of recognized postgraduate teachers in your university/college and state their academic qualifications, experience and publications.
(b) If you have co-operative teaching in your university (between the university and colleges) please give the above information in respect of teachers from the colleges also.
4. Give the number of postgraduate students, departmentwise, during the last five years in your university/college.
5. What are the areas of specialization in the different subjects in which postgraduate teaching is provided by the university/college ?
6. What are the methods of instruction adopted by the university/college at the postgraduate level? Do these include seminars and tutorials apart from lectures?
7. Are any marks given for written work (essays, tests, etc.) by the students during the period of study? If so, are these marks given any weightage in determining the final result?

(k) Qualifications and Conditions of Service of Teachers

1. Give a list of the teachers in your university/college category-wise (professors, readers, lecturers, etc.) in the different departments or subjects, including their qualifications (with class obtained) in the university/college.
2. What are the minimum qualifications laid down by the university/college for different categories of teachers?
3. Give the composition of the selection committees of the university/college for the appointment of teachers.
4. Please indicate year-wise appointment of teachers with their qualifications and age during the last 5 years.
5. Does the university/college have a composite staff for teaching undergraduate and postgraduate classes? If not, how is the division of work between the two effected?
6. What is the normal workload of different categories of teachers (how many hours per week of lectures, tutorials, seminars, administrative work, extra-curricular work, supervision of research etc.) in the university/college?
7. Please enclose a copy of the agreement or contract form for employees of the university/college. Is the agreement executed in the case of all fresh appointments ?
8. What are the salary scales laid down by the university for different categories of the teaching staff in the university and affiliated colleges?

(l) **Work by Teachers**

1. What are the criteria of promotion of teachers in your university/college?
2. What is the proportion of teachers on the university/college staff with doctorate degree?
3. Indicate the facilities which the university/college offers for research work by teachers.
4. How many teachers on your staff have published learned papers or text books, etc.? Please give a list of the publications during the last 10 years of each teacher.
5. Does the university undertake the publication of research work/learned books by teachers?
6. Is there a research fund at the disposal of the university/college? If so, please indicate the annual amount available in this fund for research work by teachers.
7. What are the other resources at the disposal of the university for promoting research work ?
8. Does the university publish any learned research journals; if so, give a list of such journals?
9. Does the university conduct any refresher courses, summer schools or seminars for its teachers? If so, in what ways have the teachers benefitted from them?
10. Is there any exchange of professors and other teachers (for limited periods) between your university and other universities.
11. Have you had any experience of teachers who have left permanent posts in your university/college to take up positions in non-academic fields during the last 5 years?

(m) **Conditions of Affiliation and Supervision of Colleges**

1. Has your university any system of periodical inspection of its affiliated/constituent colleges?
2. Is there any inspector of colleges on the staff of the university?
3. What are the conditions laid down by the university for affiliation or recognition of colleges? Please elaborate this with special reference to financial requirements e.g. endowment fund, area of land, buildings, affiliation fee, audit of accounts etc.
4. Please describe (a) the powers of the principal (b) composition of the governing body and (c) the relation of parent trust with the governing body in your college.
5. Does the power of affiliation vest with the university or the State Government ?

(n) Teacher-Pupil Ratio Faculty-wise

Please give below the teacher-pupil ratio in the various faculties of your university/college during the last five years (separately for pre-university classes).

Year	1	2	3	4	5
Name of Faculty					

(o) Student Indiscipline

1. Please give the number of incidents of student indiscipline during the last 5 years in your university/college.
2. Please give the background and the causes which led to the occurrence of these incidents.
3. State the number of students against whom disciplinary action was taken.
4. Has your university/college made any attempt to study the problems arising from co-education? If so, give details.

(p) Extra-Curricular Activities

1. What kinds of extra-curricular activities are promoted by the university/college? Please classify them under the broad heads of (a) intellectual (b) cultural and (c) physical.
2. Does the university/college encourage debates or discussions, dramatic performances, etc. among its students? If so, give details of the arrangements made in this regard.
3. Are any educational excursions undertaken by the university/college? Please give a list of the places visited during the last 5 years and the benefits resulting therefrom.
4. Is there a students' union in your university/college? If so please give a note on its constitution and general activities. A list of the persons invited to address the union during the last year may also be given.
5. Do you allow fee concessions, free studentship and scholarships? If yes, give the conditions and value of each award.
6. Is physical training compulsory for students of your university/college? If so, give details.

(q) Library

1. Has your university/college a well-equipped and up-to-date general library and departmental libraries containing adequate number of books on different subjects, general periodicals and research journals.
2. Has your university/college a text-book section and a separate research and reference section in the library?
3. Do the students have easy access (open access) to books in the library and can they obtain the books they want without undue waste of time?
4. Please give (a) the built-up area and value of the library building (b) number of readers who can be accommodated in the reading room at a time and (c) number of volumes for which stacking space is available.
5. Has the university laid down any norms for university and college libraries (including books, catalogues and equipment)?
6. Is the university library/college library in charge of professionally qualified staff (state the names and qualifications of the library staff with their salary scales)?
7. How many books were issued to students and teachers (separately) during the week January 15-21?
8. What is the average daily attendance at the library (how many undergraduates and postgraduates)?
9. What is the normal annual provision for addition of reading material (a) books (b) periodicals in the university/college library?
10. How are books selected for purchase? Is the academic staff associated with this?

(r) Laboratories

1. What is the number of students working at a time in the undergraduate/postgraduate laboratory in each Science subject? How many teachers supervise their practical work?
2. Do you consider laboratory arrangements in your university/college satisfactory for postgraduate/undergraduate teaching in Science subjects in respect of (a) accommodation (b) equipment (c) chemical and other materials required?
3. Are there separate laboratories for undergraduate—pass and honours—and for postgraduates? Please give the floor areas of each laboratory. Is there any reference library attached to each laboratory?
4. Is there a well-equipped workshop in Science departments? Please give details.

5. Do you have museums for biological and physical Sciences?
6. Is there any herbarium or biological garden attached to the botany department? Please give details.
7. What is the expenditure per postgraduate student in physics, chemistry, botany and zoology in your university/college?
8. What is the annual provision made by your university/college for teaching and research in physics, chemistry, botany and zoology? How is the amount distributed between undergraduate—pass and honours, postgraduate and research laboratories?
9. Are there any laboratory assistants in the Science departments? If so, what are the minimum qualifications prescribed for and what are their grades?
10. Have the laboratory facilities increased in proportion to the development of courses of study and research?
11. How many research scholars or research students are working in each department and how many teachers are supervising their research work?
12. What is the accommodation available for research students?
13. How many research rooms are provided in the department for the members of the staff?
14. How many research scholarships are available in each department?
15. Is there any separate research grant to each department for the purchase of equipments, chemicals etc.?

(s) Administration

1. What is the system of administration of the university/college? Please give a list of the principal officers and bodies of the university indicating briefly the powers exercised by them?
2. How are the principal officers of the university/college appointed? Has the university/college got sufficient administrative staff for efficient disposal of its work?
3. Is there any arrangement in the university/college for adding to the administrative staff to deal with any increase in the volume of work?

(t) Finance

1. Has the university/college adequate resources at its disposal for meeting its deficit? If such resources are not readily available, how does the university/college maintain itself?
2. Does the State Government/Central Government provide any funds for meeting the developmental needs (apart from

- maintenance) of the university/college? Are these incomes commensurate with the requirements?
3. Are adequate resources available to the university/college for performing its educational functions in an efficient way?
 4. What is the total annual expenditure of the university/college? Please indicate the contributions from different sources e.g. government funds—(a) Central (b) State, fees, endowments, charitable institutions, others.
 5. What other fees apart from tuition fees are charged by the university/college authorities? Please indicate the amount of (a) building fees (b) library fees (c) magazine fees (d) examination fees (separately for terminal and university examinations) (e) association fees (f) games fees (g) other fees. Are corresponding benefits available to students?

TOTAL UNIVERSITY ENROLMENT IN INDIA WITH FACULTY—WISE BREAK UP (1916/17 to 1963/64)

(Includes Intermediate and Pre-University students of Universities as well as Boards of Intermediate Education).

Year	Total Enrolment	Arts	Science	Commerce	Engg. & Tech.	Med.	Agri.	Vet. Sc.	Edu.	Law	Others
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.
1916-17	..	29,655	22,364	—	383	2,409	—	—	61	5,272	446
1926-27	..	44,747	28,611	832	1,506	4,485	537	—	796	9,220	1,528
1936-37	..	61,289	41,221	2,239	2,459	5,215	885	—	2,603	8,028	2,432
1942-43	..	86,225	69,985	7,549	3,574	6,615	1,829	106	2,118	5,863	300
1946-47	..	1,24,667	85,735	20,322	5,348	8,847	4,302	—	2,006	9,774	4,843
1947-48	..	1,17,609	89,043	22,389	6,793	8,205	4,280	398	2,675	10,316	4,009
1948-49	..	1,40,719	1,14,340	21,685	8,662	14,311	4,215	958	3,724	9,620	4,847
1949-50	..	1,63,075	1,23,345	32,396	10,414	13,640	4,848	885	3,397	11,363	3,623
1950-51	..	1,80,806	1,27,168	34,067	12,094	15,260	4,744	—	4,135	13,649	4,822*
1951-52	..	2,12,923	1,42,666	41,458	1,39,00	16,942	4,856	—	4,982	16,746	4,551
1952-53	..	2,53,494	1,48,676	46,279	14,162	17,929	4,798	—	6,104	17,118	4,293
1953-54	..	2,93,677	1,62,234	53,124	15,613	18,756	5,053	—	7,046	18,706	6,009*
1954-55	..	3,33,412	1,82,161	58,718	16,935	19,767	6,378	—	8,699	19,491	5,918
1955-56	..	3,61,904	1,97,475	64,167	19,699	21,405	8,230	—	11,371	20,162	8,284
1956-57	..	3,95,672	2,10,039	66,674	21,237	23,431	10,389	3,572	13,000	20,707	4,747
1957-58	..	4,15,313	2,29,899	69,570	27,534	2,559	12,475	4,139	14,357	22,424	6,039
1958-59	..	4,61,081	2,56,145	78,762	32,809	27,537	16,828	4,524	15,297	24,376	11,263
1959-60	..	4,72,183	2,92,190	84,127	39,324	30,949	21,306	5,021	16,609	25,986	9,442
1960-61	..	4,87,016	2,94,329	92,802	45,139	34,139	23,389	4,788	18,990	27,240	2,552
1961-62	..	4,99,974	3,36,722	1,25,142	58,168	39,569	24,794	5,214	21,718	29,401	14,678
1962-63	..	5,32,660	3,86,374	1,29,951	68,589	49,546	31,427	5,524	25,638	28,944	14,013
1963-64	..	5,79,049	4,35,925	1,30,579	73,015	54,708	41,116	5,624	26,727	29,571	8,384

*Veterinary Science included in Medicine

APPENDIX 4

ADMISSION QUALIFICATIONS, AGE AND CEILINGS FOR ADMISSION

1. AGRA UNIVERSITY

(a) *Admission qualification*

B.A.	I.A. or I.Sc. or I.Com.
B.Sc.	I.Sc.
M.A.	B.A. or B.Sc. or B.Com.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

No minimum or maximum age is prescribed for admission to degree courses except in the case of admission to the M.B.B.S. course for which the minimum age is 17 years on 1st October of the year of admission.

(c) *Ceilings for admission or other conditions*

The maximum number of students in a lecture class should not exceed 60; the number may go up to 80 if tutorial work is conducted according to rules laid down by the university.

2. ALLAHABAD UNIVERSITY

(a) *Admission qualification*

B.A.	I.A. or I. Com. or I.Sc.
B.Sc.	I.Sc.
M.A.	B.A. or B.Sc. or B.Com.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

(c) *Ceilings for admission or other conditions*

Ceilings are prescribed both for postgraduate and undergraduate classes. (Details are not available).

3. ANDHRA UNIVERSITY

(a) *Admission Qualification*

P.U.C.	Matriculation
B.A.	P.U.C.
B.Sc.	P.U.C.
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum Age for admission*

16 + for the 1st degree course.

(c) *Ceilings for admission or other conditions*

The ceilings are fixed every year in a meeting of the heads of departments. The extra-curricular activities of the student and his general ability to prosecute studies effectively and to live a cooperative life are taken into account.

4. ANNAMALAI UNIVERSITY

(a) *Admission qualification*

P.U.C.	S.S.L.C. or Matriculation
B.A.	P.U.C.
B.Sc.	P.U.C.
M.A.	B.A. or B.Sc. or B.O.L.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

14 years and 6 months on 1st of July for the P.U.C.

(c) *Ceilings for admission or other conditions*

P.U.C.	400
B.A., B.Sc., M.A., M.Sc. etc.	—according to the accommodation available in laboratories, lecture-halls, workshops etc.
B.E.	180

5. BANARAS HINDU UNIVERSITY

(a) *Admission qualification*

P.U.C.	Admission examination of the university or matriculation or high school.
B.A.	P.U.C. in Arts or Science of the university or Senior Cambridge in Arts or any equivalent examination.
B.Sc.	Same as in B.A. but the candidate must have taken Science.
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

16 years on 1st of October for the first year of the three year-degree course; maximum age is 21 years.

(c) *Ceilings for admission or other conditions*

The university has fixed the number of seats for each college and for each class.

6. BOMBAY UNIVERSITY

(a) *Admission qualification*

B.A.	I.A.
B.Sc.	I.Sc.
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

At present, minimum age is prescribed for admission to M.B.B.S., B. Sc. (Nursing) & B.D.S. Steps are proposed to be taken for laying down the minimum age of 15+ for admission to the first year of the degree course.

(c) *Ceilings for admission or other conditions*

The following limits have been laid down for admission to constituent colleges :

Composite Colleges in Arts and Science—2500.

Colleges of Law and Commerce—1250.

The Syndicate has also laid down that the number of students in Technology, Medicine etc. shall not exceed 150 in any single division.

7. BHAGALPUR UNIVERSITY

(a) *Admission qualification*

P.U.C.	Matriculation
B.A.	Higher Secondary or P.U.C.
B.Sc.	Higher Secondary or P.U.C.
M.A.	B.A. (on the basis of marks)
M.Sc.	B.Sc. (on the basis of marks)

(b) *Minimum age for admission*

Minimum age has been laid down only for the Faculties of Agriculture and Engineering.

(c) *Ceilings for admission or other conditions*

8. BIHAR UNIVERSITY :

(a) *Admission qualification*

B.A.	P.U.C. or Higher Secondary.
B.Sc.	P.U.C. Science or Higher Secondary Science.
M.A.	B.A., B.Sc. or B.Com. in the subject, provided candidates fulfil the necessary conditions.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

Nil.

(c) *Ceilings for admission or other conditions*

For undergraduate courses, the regulations provide for a maximum of 1000 students. In postgraduate departments, the number depends on physical facilities.

9. CALCUTTA UNIVERSITY

(a) *Admission qualification*

P.U.C.	School final
B.A.	P.U.C. or Higher Secondary
B.Sc.	P.U.C. Science or Higher Secondary Science
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

There is no minimum age for admission at present. The Academic Council has adopted 16+ as the age of admission to the first year of the degree course but this has not yet been enforced.

(c) *Ceilings for admission or other conditions*

In the university departments ceilings vary from 12 to 200. For admission to undergraduate classes in colleges, the ceilings are prescribed by the university and University Grants Commission. The number of students in a class or section should not exceed 150 as a general rule laid down in the Statutes.

10. DELHI UNIVERSITY

(a) *Admission qualification*

B.A.	Higher Secondary
B.Sc.	B.Sc. general group 'A'—Higher Secondary with 50% marks. (With Science subjects)
M.A.	B.A. Hons. with minimum 38% and 40% marks in aggregate in Arts & Social Sciences respectively or B.A./B.Sc. (Pass) with at least 45% in aggregate or 50-55% marks in various subjects.
M.Sc.	B.Sc. with at least 55% to 60% marks in the aggregate and 60% in the subject.

(b) *Minimum age for admission*

16 years on the 1st of October.

(c) *Ceilings for admission or other conditions*

Each college is allowed to have a maximum of 1000 students. In the courses which have practical classes the number depends on the availability of seats.

11. GAUHATI UNIVERSITY

(a) *Admission qualification*

P.U.C.	Matriculation
B.A.	Higher Secondary or P.U.C.
B. Sc.	Higher Secondary or P.U.C.
M.A.	B.A. with 42% marks in the subject offered for M.A.
M.Sc.	B.Sc. with 42% marks in the subject offered for M.Sc.

(b) *Minimum age for admission*

No.

(c) *Ceilings for admission or other conditions*

It depends upon accommodation and financial resources.

12. GORAKHPUR UNIVERSITY

(a) *Admission qualification*

B.A.	I.A.
B.Sc.	I.Sc.
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

Nil

(c) *Ceilings for admission or other conditions*

M.Sc. Physics	20
Botany	20
Chemistry	30
Zoology	20
M.A. English	100
Sociology	110
Geography	117

13. GUJARAT UNIVERSITY

(a) *Admission qualification*

P.U.C.	S.S.C.
B.A.	P.U.C.
B.Sc.	P.U.C.
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

The minimum age for admission is prescribed as 15 + on 15th June for pre-university and 17 + for admission to 1st year of the M.B.B.S. class.

(c) *Ceilings for admission or other conditions*

Maximum number of students in a college has been laid down at 1500. No division can consist of more than 100 students provided that the vice-chancellor can allow the limit to be exceeded by 10%. In the university departments and postgraduate centres admissions are regulated according to the availability of accommodation.

14. GURUKUL KANGRI VISHVAVIDAYALYA

(a) *Admission qualification*

B.A.	Intermediate with Sanskrit or Uttar Madhyama with English.
M.A.	B.A. or Alankar or Shastri with English or Acharya.

(b) *Minimum age for admission*

About 20 years for the 1st year of Intermediate.

(c) *Ceilings for admission or other conditions*

No

15. JABALPUR UNIVERSITY

(a) *Admission qualification*

B.A.	Higher Secondary.
B.Sc.	Higher Secondary.
M.A.	B.A., B.Sc., B.Com., B.Sc. (Home Science) and B.Sc. (Agriculture)
M.Sc.	B.Sc.

(b) *Minimum age for admission*

Only in professional courses—(16+).

(c) *Ceilings for admission or other conditions*

The maximum number of students is 40 in each postgraduate department.

16. JADAVPUR UNIVERSITY

(a) P.U.C.

School final.

B.A.

P.U.C. or Higher Secondary with at least a second class.

B.Sc.

P.U.C. or Higher Secondary in Science with at least a second class.

M.A.

B.A. Hons. or B.A. pass with a prescribed percentage of marks in the subject offered at the postgraduate level.

M.Sc.

B.Sc. Hons. or B.Sc. pass with a certain minimum percentage of marks in the subject offered at the postgraduate level.

(b) *Minimum age for admission*

16+ on 1st Oct. for admission to the first year of the degree course.

(c) *Ceilings for admission or other conditions*

	P.U.C.	Undergraduate	Postgraduate
Arts	160	20	40
Science	80	20	15
			(Maths. 40)

17. JAMMU & KASHMIR UNIVERSITY

(a) *Admission qualification*

P.U.C.	Matriculation
B.A.	P.U.C. or Higher Secondary elective —Arts.
B.Sc.	P.U.C. or Higher Secondary elective —Science.
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

No

(c) *Ceilings for admission or other conditions*

No

18. JODHPUR UNIVERSITY

(a) *Admission qualification*

P.U.C.	Matriculation
B.A.	P.U.C. or Higher Secondary
B.Sc.	P.U.C. or Higher Secondary
M.A.	Graduate
M.Sc.	Graduate

(b) *Minimum age for admission*

Age for admission to P.U.C. and first year of degree course is contemplated to be 15 + and 16 + respectively from 1964-65.

(c) *Ceilings for admission or other conditions*

Undergraduate—60 students per section (Maximum number of sections 6).

Postgraduate—40 students per class (Combined classes may have 60 students).

19. KALYANI UNIVERSITY

(a) *Admission qualification*

M.A.	At least a second class graduate in the subject concerned.
M.Sc.	At least a second class graduate in the subject concerned.

(b) *Minimum age for admission*

No age limit has been laid down except in the department of physical education. In practice, students between 16 and 18 years are admitted to undergraduate courses.

(c) *Ceilings for admission or other conditions*

It is contemplated that not more than 30 students will be admitted to postgraduate classes and not more than 20 students to honours classes.

20. KARNATAK UNIVERSITY

(a) *Admission qualification*

P.U.C.	S.S.C. with English for Arts students and Mathematics for Science students.
B.A.	P.U.C. Arts.
M.A.	B.A. (ordinarily second class or higher)
M.Sc.	B.Sc. (ordinarily second class or higher)

(b) *Minimum age for admission*

16+ (on or before 1st October of the year) for admission to the first year of the degree course.

(c) *Ceilings for admission or other conditions*

Generally speaking, the postgraduate departments in Humanities and Social Sciences are advised not to admit more than 30 students in a class. For postgraduate Science subjects, the ceilings are as under :

Physics	25 for 3 branches.
Chemistry	40 for 3 branches.
Zoology }	12
Botany }	
Geology }	
Statistics	25
Geography	15

21. KURUKSETRA UNIVERSITY

(a) *Admission qualification*

P.U.C.	Matriculation
B.A.	Higher Secondary or P.U.C.
B.Sc.	Higher Secondary or P.U.C. with Science.
M.A.	B.A. Hons. or B.A./B.Sc. degree or B.A./B.Sc. (Edu) degree of this university in the major subject of the course with such attainments as may be prescribed by the head of the department concerned.

M.Sc. (Chemistry
and Physics)

B.Sc. Hons. with at least 45% marks in aggregate or B.Sc. Pass with at least 55% marks in aggregate with Chemistry, Physics and Mathematics or B.Sc. (Edu) of this university in the major subject of the course subject to passing a special test conducted by the head of the department concerned.

(b) *Minimum age for admission*

16+ for admission to the first year of the degree course and 19+ for postgraduate courses.

(c) *Ceilings for admission or other conditions*

32 for M.Sc. Chemistry and 12 for Physics.

22. KERALA UNIVERSITY

(a) *Admission qualification*

P.U.C.	S.S.L.C.
B.A.	P.U.C.
B.Sc.	P.U.C.
M.A.	B.A. or B.Sc.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

15+ on 1st Oct. for P.U. C. and 16+ on 1st Oct. for first year of the degree course.

(c) *Ceilings for admission or other conditions*

Generally the following limits are followed :

M.A. (Humanities)	25 Seats.
M.A. (Social Sciences)	20 Seats.
M.Sc. (Maths)	15 Seats.
M.Sc. (other subjects)	12 Seats.
M. Com.	20 Seats.
B.Sc. (Maths)	60 Seats.
B.Sc. (other subjects)	40 Seats.
B.A./B.Com.	60 Seats.
B. Ed.	100 Seats.

23. MADRAS UNIVERSITY

(a) *Admission qualification*

P.U.C.	Matriculation
B.A.	P.U.C.
B.Sc.	P.U.C.
M.A.	B.A. or B.Sc.
M.Sc.	B.Sc. or B.A. (with a Science subject).

(b) *Minimum age for admission*

15 years and 6 months on 15th July for first degree course except where a higher age limit is prescribed in the regulations.

(c) *Ceilings for admission or other conditions*

Undergraduate—Science subjects— 48

Humanities—100

Postgraduate—15 in Science and 20 in Humanities

24. MAGADH UNIVERSITY

(a) *Admission qualification*

P.U.C. Secondary School Certificate

B.A. P.U.C. or Higher Secondary.

M.A. B.A. with at least 40% marks in the subject.

(b) *Minimum age for admission*

No

(c) *Ceilings for admission or other conditions*

M.A. 40 to 48

25. MARATHWADA UNIVERSITY

(a) *Admission qualification*

P.U.C. Matriculation

B.A. P.U.C.

B.Sc. P.U.C.

M.A. degree.

M.Sc. degree.

(b) *Minimum age for admission*

No minimum age is prescribed

(c) *Ceilings for admission or other conditions*

No

26. M.S. UNIVERSITY OF BARODA

(a) *Admission qualification*

P.U.C. S.S.C.

B.A. P.U.C. (Arts)

B.Sc. P.U.C. (Science)

M.A. B.A.

M.Sc. Second class B.Sc. and satisfactory interview
(Under the Ordinances, B.Sc. Pass students
are eligible for admission)

(b) *Minimum age for admission*

15+ for P.U.C.

(c) *Ceilings for admission or other conditions*

First Year B.A.—360

(There is no restriction at subsequent stages).

Science departments decide the number of students to be admitted according to the available facilities.

27. MYSORE UNIVERSITY

(a) *Admission qualifications*

P.U.C.	S.S.L.C.
B.A.	P.U.C. or Higher Secondary
B.Sc.	P.U.C. or Higher Secondary
M.A.	B.A. with the subject chosen for M.A. as one of the major subjects.
M.Sc.	B.Sc. with the subject chosen for M.Sc. as one of the major subjects.

(b) *Minimum age for admission*

Only in professional courses.

(c) *Ceilings for admission or other conditions*

The number depends on library and laboratory facilities and varies from faculty to faculty.

28. NAGPUR UNIVERSITY

(a) *Admission qualification*

P.U.C.	High School
B.A.	P.U.C. Arts
B.Sc.	P.U.C. Science
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

Minimum age for admission has been laid down only for the Faculties of Medicine and Veterinary Science.

(c) *Ceilings for admission or other conditions*

No ceiling is prescribed for admission to postgraduate departments except in Geology and Bio-Chemistry.

29. NORTH BENGAL UNIVERSITY

(a) *Admission qualification*

P.U.C.	Matriculation or School final
B.A.	Higher Secondary or P.U.C.
B.Sc.	Higher Secondary or P.U.C.
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

(c) *ceilings for admission or other conditions*

30 students in each class under the Faculty of Arts; 20 students in each class under the Faculty of Science.

30. OSMANIA UNIVERSITY

(a) *Admission qualification*

P.U.C.	H.Sc. with at least 35% marks in one attempt.
B.A.	P.U.C.
B.Sc.	P.U.C.
M.A.	B.A. with at least 45% marks in the subject (For some subjects 40% and above)
M.Sc.	B.Sc. with at least 45% marks in the subject.

(b) *Minimum age for admission*

Only for professional courses.

(c) *Ceilings for admission or other conditions*

Ceilings have been prescribed for various departments and colleges. The ceiling in respect of postgraduate departments of Science is 30.

31. PANJAB UNIVERSITY :

(a) *Admission qualification*

P.U.C.	Matriculation
B.A.	Higher Secondary or P.U.C.
B.Sc.	Higher Secondary or P.U.C.
M.A.	B.A. Hons. or B.A./B.Sc. Pass in at least second division or with at least 45% marks in the subject or Master's degree in other subject or faculty.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

In Medicine and Engineering only.

(c) *Ceilings for admission or other conditions*

For admission to colleges the limit suggested by the University Grants Commission has been adopted.

32. PUNJABI UNIVERSITY

(a) *Admission qualification*

P.U.C.	Matriculation
B.A.	Higher Secondary or P.U.C.
B.Sc.	Higher Secondary or P.U.C.

M.A.	B.A. Hons. or B.A./B.Sc. Pass in at least second division or with at least 45% marks in the subject or Master's degree in other subject or faculty.
M.Sc.	B.Sc. with 50% marks in aggregate and 50% marks in the subject concerned.

(b) *Minimum age for admission*

Minimum age has been laid down for admission to Medical and Engineering courses only.

(c) *Ceilings for admission or other conditions*

In professional colleges and Science subjects, students are admitted according to the number of seats sanctioned by the university.

33. PATNA UNIVERSITY

(a) *Admission qualification*

Admissions are made on the basis of marks at the qualifying examination.

(b) *Minimum age for admission*

Only for the Faculty of Medicine.

(c) *Ceilings for admission or other conditions*

Nil

34. POONA UNIVERSITY

(a) *Admission qualification*

Pre-degree	S.S.C.
B.A.	Pre-degree (Arts, Science & Commerce)
B.Sc.	Pre-degree (Science).
M.Sc.	B.Sc.

(b) *Minimum age for admission*

Only for the Faculty of Medicine.

(c) *Ceilings for admission or other conditions*

For Postgraduate Classes

Chemistry	128
Physics	60
Botany	40
Zoology	24
Statistics	72
Geography	35

35. RABINDRA BHARATI

(a) *Admission qualification*

B.A. Higher Secondary or P.U.C.

(b) *Minimum age for admission*

No

(c) *Ceilings for admission or other conditions*

75 for degree courses and 25 in each class of the three-year senior diploma course (Dance, Drama & Music).

36. RAJASTHAN UNIVERSITY

(a) *Admission qualification*

P.U.C.	High School or Matriculation
B.A.	P.U.C. or Higher Secondary.
B.Sc.	P.U.C. or Higher Secondary.
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

15+ for admission to P.U.C. and 16+ for admission to the first year of the degree course.

(c) *Ceilings for admission or other conditions*

Admissions are made according to facilities. The number of students in a class should not exceed 60.

37. RANCHI UNIVERSITY

(a) *Admission qualification*

P.U.C.	Matriculation
B.A.	P.U.C. or Higher Secondary.
B.Sc.	P.U.C. or Higher Secondary.
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

Minimum age for admission has been laid down only for the Faculty of Medicine (17 years on 1st October of the year of admission)

(c) *Ceilings for admission or other conditions*

- 16 in Physics, Chemistry, Botany and Zoology.
- 32 in Mathematics, Anthropology and Psychology.
- 40 in English and Geography.
- 50 in History, Philosophy, Economics and Hindi.
- 60 in Political Science.
- 12 in Geology.

38. S.V. VIDYAPEETH

(a) *Admission qualification*

P.U.C.	S.S.C.
B.A.	P.U.C.
B.Sc.	P.U.C.
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

16+ for admission to the first year of the degree course.

(c) *Ceilings for admission or other conditions*

For colleges the limit suggested by the University Grants Commission has been accepted.

39. SAUGAR UNIVERSITY

(a) *Admission qualification*

B.A.	Higher Secondary or P.U.C.
B.Sc.	Higher Secondary or P.U.C.
M.A.	B.A.
M.Sc.	B.Sc. with the subject concerned.

(b) *Minimum age for admission*

16+ for admission to the first year of the degree course.

(c) *Ceilings for admission or other conditions*

M.Sc. Physics	16
M.Sc. Chemistry	24
M.Sc. Botany	15

40. SHIVAJI UNIVERSITY

(a) *Admission qualification*

P.U.C.	S.S.C.
B.A.	Pre-degree (Arts, Science and Commerce)
B.Sc.	Pre-degree (Science)
M.A.	B.A.
M.Sc.	B.Sc.

(b) *Minimum age for admission*

Minimum age for admission has been prescribed only in the Faculty of Medicine (17 years on 1st October of the year of admission)

(c) *Ceilings for admission or other conditions*

Normally 100 students per division.

41. S.N.D.T. WOMEN'S UNIVERSITY

(a) *Admission qualification*

P.U.C.	Matriculation or entrance examination.
B.A.	Pre-degree (Arts, Science and Commerce)
M.A.	B. A.

(b) *Minimum age for admission*

No minimum age is prescribed.

(c) *Ceilings for admission or other conditions*

The teacher-pupil ratio in Education and Home Science is generally kept at 1 : 10 and on the Arts side at 1 : 20.

42. SRI VENKATESWARA UNIVERSITY

(a) *Admission qualifications*

B.Sc.	B. + in the subject and B. + in aggregate or 450 marks in H.S.S.L.C.
M.Sc.	First or high second class B.Sc.

(b) *Minimum age for admission*

16 years on the 31st of October for admission to first year of the degree course.

(c) *Ceilings for admission or other conditions*

	Arts	Science
Undergraduate	24—30	8—24
Postgraduate	12—25	12—24

43. VIKRAM UNIVERSITY

(a) *Admission qualification*

— —

(b) *Minimum age for admission*

There is a minimum age for admission to Engineering and Medical courses only.

(c) *Ceilings for admission or other conditions*

M.Sc. Chemistry	25
M.Sc. Physics, Mathematics and Statistics	20
M.Sc. Geology, Botany and Zoology	15

44. VISVA-BHARATI

(a) *Admission qualification*

B.A.	H.S.C.
B.Sc.	H.S.C.
M.A.	B.A.
M.Sc. (Maths)	B.Sc. with Mathematics.

(b) *Minimum age for admission*

16 + for admission to the first year of the degree course.

(c) *Ceilings for admission or other conditions.*

APPENDIX—5

COMPOSITION OF THE BOARDS OF STUDIES AND PROCEDURE FOR REVISION OF SYLLABUSES

1. AGRA UNIVERSITY

Boards of Studies in different subjects frame the syllabuses which are considered by the Faculty, Academic Council and Executive Council. The boards consist of the following :

- (i) The member or members representing the subject on the Faculty concerned,
- (ii) two persons having expert knowledge of the subject, elected by the Faculty concerned, who are resident within the State of U.P. or Delhi or are technical officers in the industry concerned in the country in the case of persons elected to the Board of Studies in the Faculty of Technology and
- (iii) two teachers of the subjects in affiliated colleges, other than persons under (i) above, by rotation in order of seniority.

2. ANDHRA UNIVERSITY

The Boards of Studies draw up the syllabuses, scrutinize question papers of previous years and recommend the names of examiners and paper setters. Members of the Boards (other than ex-officio) are appointed by the Syndicate as approved by the vice-chancellor in the case of honours and postgraduate and professional boards. These appointments are made on the recommendation of the heads of the department in the subject concerned. In the case of pass boards in subjects in which higher courses have not been organized, the total number of members is 40. The strength of members in professional boards varies from 4 to 12 in different courses.

Boards of Honours and Postgraduate Studies

- (a) The university professor or head of the department in the subject as ex-officio member and chairman.
- (b) The chairman of the corresponding pass board as ex-officio member.
- (c) Not more than five other members of whom two shall ordinarily be drawn from outside the university colleges.

Pass Boards in which higher studies have been organized

- (a) The chairman of the Board of Honours and Postgraduate Studies as ex-officio member.
- (b) Not more than 4 other members. (The composition of English pass and Telugu or Sanskrit pass boards is slightly different).

3. ANNAMALAI UNIVERSITY

Boards of Studies, Faculties and other bodies concerned with courses of studies and examinations take note of significant advances in their respective fields and suggest changes from time to time. Boards of Studies, Faculties and Academic Council consist of heads of departments, some senior teachers at the university and experts from other universities and institutions.

4. BANARAS HINDU UNIVERSITY

The Boards of Studies in Arts and Science Faculties consist of 7 members, 2 external from other universities and the remaining internal. The board ordinarily meets twice a year to consider changes if necessary. Boards are constituted by the Faculty concerned. The number of members is fixed by the Academic Council.

5. BHAGALPUR UNIVERSITY

The members of the boards are selected by the Faculty concerned every year in the month of March. The syllabi are reviewed every year by the boards concerned in the month of November and the final decision is taken in the month of March every year.

6. BOMBAY UNIVERSITY

The Boards of Studies in the different subjects recommend to the Academic Council and the Syndicate the courses of study to be prescribed for different examinations. The board consists of:

- (i) The heads of the university departments concerned,
- (ii) university professors in the said subjects,
- (iii) the heads of departments in the said subjects in degree colleges and constituent recognized institutions,
- (iv) two members co-opted by the board from among teachers (not heads of departments),
- (v) such member or members co-opted by the Board from among persons who are not teachers, as prescribed by the Statutes.

7. CALCUTTA UNIVERSITY

The Academic Council makes regulations for courses of studies on the recommendations of the Boards of Studies concerned.

8. DELHI UNIVERSITY

Subject to the general guidance of the Academic Council, post-graduate studies in the university are organized by Boards of Research Studies viz., one each for Humanities, Sciences, Law, Medical Sciences and Music. Each board consists of the vice-chancellor, the deans and the heads of departments concerned, with power to co-opt two other members in the cases of research boards for Humanities and Sciences and three for

Law, Medical Sciences and Music. The co-opted members hold office for a period of two years. Each board elects a chairman from among its own members who holds office for a period of two years.

9. GAUHATI UNIVERSITY

The committees of courses and studies which frame the syllabi are appointed by the Faculty concerned. Their recommendations are considered by the Academic Council, Executive Council and University Court.

10. GUJARAT UNIVERSITY

The courses of studies are framed by the Boards of Studies in the subjects concerned and approved by the Academic Council and the Syndicate. Boards of Studies in various subjects comprise ex-officio members and co-opted members whose number varies from one subject to another.

11. GORAKHPUR UNIVERSITY

The composition of the Board of Studies is as under :

Postgraduate Board of Studies

- (1) Head of the department—ex-officio chairman.
- (2) All professors of the university departments.
- (3) One reader from the department in order of seniority.
- (4) One lecturer from the department in order of seniority.
- (5) Two members appointed by the Faculty concerned who are not in service of the university.

Undergraduate Board of Studies

- (i) Head of the department
- (ii) One reader
- (iii) Two teachers
- (iv) Two teachers teaching the subject in the affiliated colleges in order of seniority.
- (v) Two persons nominated by the Faculty who are not in the service of the university, a college hall or hostel.

12. JABALPUR UNIVERSITY

Boards of Studies are called departments of studies. Their composition is as under :

- (i) Dean of the Faculty
- (ii) All professors and readers in the department (subject).
- (iii) Five teachers according to seniority.
- (iv) Research workers appointed in the department.
- (v) Two experts appointed by the Faculty.
- (vi) Two teachers of the university appointed by the Faculty.

The recommendations of the Boards of Studies are considered by the Faculty and Academic Council.

13. JADAVPUR UNIVERSITY

Recommendations regarding syllabuses are made by the Boards of Studies. The Board of Studies for each department sends its recommendations to the Faculty concerned and the Faculty in its turn advises the Academic Council.

- Board of Studies— (i) Head of the department, (ii) teachers of the department, (iii) two experts from outside.
- Faculty — (i) Dean of Faculty (ii) the heads of the department, (iii) professors of the department, (iv) two teachers (other than professors) from each department, (v) four nominated educationists.

14. JAMMU AND KASHMIR UNIVERSITY

The following bodies are responsible for courses of study :

- (a) Boards of Studies.
- (b) Faculties.
- (c) Academic Board (for undergraduate studies only).
- (d) Board of Postgraduate Studies.

15. JODHPUR UNIVERSITY

In prescribing courses of study assistance is taken from at least two experts in the subject from outside the university.

16. KALYANI UNIVERSITY

Pending the formation of committees on courses of study *ad hoc* committees are functioning for drawing up syllabuses in different subjects. They consist of heads of departments and experts.

17. KARNATAK UNIVERSITY

The boards draw up the syllabuses for approval of the Academic Council and the Syndicate. The number of members of the Boards of Studies varies from 5 to 8.

18. KERALA UNIVERSITY

The Boards of Studies consist of the following :

- (1) The university professor or where there is no professor, the head of the university department or section of study or research in the subject for which the board is appointed.
- (2) Not less than five and not more than eleven members, provided that in case of a subject in which there are two boards :
 - (a) The number of members in each board shall not be less than five or more than eleven including **ex-officio members**,

- (b) The university professor or head of the university department or section as the case may be, shall be a member ex-officio of the board for postgraduate studies, and
- (c) The chairman of one board shall be a member ex-officio of the other board in the subject.

19 KURUKSETRA UNIVERSITY

The courses have been framed only recently. They are based mainly on the pattern of the Panjab and Delhi Universities. The bodies concerned with the drawing up of the syllabuses are :

- (a) Boards of Studies
- (b) Faculties
- (c) Academic Council

The Board of Studies has a maximum number of seven members comprising professors, honorary professors, readers in the department and two outside experts and such other university teachers as may be nominated by the vice-chancellor on the recommendation of the head of the department.

20 MADRAS UNIVERSITY

Each board consists of no fewer than three and not more than twelve members. The senior university professor or where there is no professor, the head of the department or the section in the subject for which the board is appointed is an ex-officio member of the postgraduate board.

21 MAGADH UNIVERSITY

Two or more university professors of other university departments are associated as experts along with six or seven teachers of the university in the Board of Studies.

22 MARATHWADA UNIVERSITY

The Board of Studies consists of :

- (i) Head of the university department in the subject.
- (ii) Heads of the departments in the said subject in colleges and recognized institutions,
- (iii) Two experts nominated by the vice-chancellor, one of whom is from outside the university.

23 M. S. UNIVERSITY OF BARODA

Boards of Studies in each subject consist of half the number of teachers in the subject and three to five experts from other universities or research organizations.

24 MYSORE UNIVERSITY

Boards of Studies in each subject consist of half the number of teachers in the subject and three to five experts from other universities or research organizations.

25 NAGPUR UNIVERSITY

Boards of Studies in each subject frame the syllabuses. The board consists of not less than three and not more than eight members in the Faculties of Arts, Science and Commerce. It consists of professors of the university and other universities and also other persons possessing special knowledge of the subject concerned.

26 NORTH BENGAL UNIVERSITY

Boards of Studies in the different subjects are concerned with the drawing up of syllabuses. Each board consists of not less than three and not more than eight members, at least one (or two) of whom have to be experts from outside universities. The head of the department is the ex-officio chairman.

27 OSMANIA UNIVERSITY

Different committees are formed with experts in different subjects for drawing up syllabuses pending formation of the Boards of Studies and the Academic Council.

28 PANJAB UNIVERSITY

Board of Studies frames the syllabus. The composition of the board is as follows :

- (a) Head of the department concerned (ex-officio chairman).
- (b) The maximum number of members of the Board of Studies is seven at least one of whom has to be an expert in the subject from outside the university. In professional faculties where there is only one Board of Studies the number of members may go upto fourteen.

29 PATNA UNIVERSITY

The following bodies are concerned with courses of study :

- (a) Board of Studies
- (b) Faculties
- (c) Academic Council
- (d) Syndicate
- (e) Senate

The composition of Board of Studies is as under :

- (i) The head of the university department as chairman,
- (ii) Professors, honorary professors, if any, and one reader and one lecturer of the university department according to seniority for a period of two years,
- (iii) Two members co-opted by rotation from among teachers of the subject in colleges for a term of two years.

- (iv) One member co-opted from outside the university for his expert knowledge for a term of two years.

If there is no university department of studies for a subject, a committee of five persons appointed by the vice-chancellor on the advice of the dean of the Faculty concerned, constitutes the Board of Studies for that subject or when the subjects have been grouped together, for that group of subjects. Provided that the committee so appointed shall include at least one member taken from outside the university for his expert knowledge of the subject and at least one teacher of the subject from each college admitted to the privileges of the university by rotation according to seniority.

30 POONA UNIVERSITY

The Board of Courses of Study in various subjects, the Faculty and the Academic Council are concerned with the drawing up of syllabuses but such boards do not exist at present.

The Board of Studies for every subject or group of subjects consists of:

- (i) Heads of the university departments in the subjects for which the board is constituted.
- (ii) Heads of the departments in the said subjects in degree colleges and recognized institutions.
- (iii) Such classes of teachers of the university in the said subjects, in such numbers and elected in such manner, as may be prescribed by the Statutes.
- (iv) Persons who shall not be teachers of the university, co-opted by the board, not exceeding such number as is prescribed by Statutes.

31 PUNJABI UNIVERSITY

The syllabuses are drawn up by the Boards of Studies and considered by the Faculty concerned, the Academic Council, the Syndicate and the Senate. The Board of Studies in Arts, Science and Commerce consists of:

- (a) The university professor or professors, and if there is no university professor, the university reader or the head of the department of the university in which there is neither a professor nor a reader,
- (b) members to be selected every alternate year in the manner laid down in regulations 2 and 3,

32 RABINDRA BHARATI

The Academic Council consisting of seven members, including heads of the department and the vice-chancellor who is the ex-officio chairman, is concerned with drawing up of syllabuses.

33. RAJASTHAN UNIVERSITY

Boards of Studies, Faculties, Academic Council and Syndicate are concerned with the courses of study. The number of Board of Studies (for each subject or group of subjects) in each Faculty as also the number of members of each board is determined by the Syndicate on the recommendations of the Academic Council and the Faculty concerned.

34. RANCHI UNIVERSITY

The Faculties elect members to the Boards of Courses and Studies which draw up the syllabi in different subjects. The members are invariably senior teachers in the subjects belonging to the Faculty. Sometimes one or two specialists from outside the university are co-opted as members of the board.

35. S.V. VIDYAPEETH

Each Board of Studies consists of "teachers" who have at least five years' teaching experience at graduate level and who are not members of Syndicate, possessing qualifications recognized by the Vidyapeeth for imparting instruction in the subject or subjects comprised in the board, or guiding research in such subject or subjects as professor, reader or lecturer. Each board has power to co-opt not more than two members.

36. SAUGAR UNIVERSITY

The Committee of Courses comprises :

- (1) The head of the department of studies (chairman),
- (2) The professors and readers of the subject in the university teaching department.
- (3) Three other teachers of the subject elected by the Faculty concerned at least two of whom are teachers of affiliated colleges in the Faculty.
- (4) One other person, not being a teacher of the university in such cases as the Faculty may think fit.

37. S.N.D.T. WOMEN'S UNIVERSITY

The Boards of Studies are primarily concerned with the drawing up of syllabuses in different subjects. Advisory bodies are also set up to frame courses which are finalized by the Boards of Studies.

Each Board of Studies consists of:

- (i) Experts in the subject from the full-fledged conducted and affiliated colleges, not exceeding 4, (nominated by the Syndicate).
- (ii) Experts in the subjects who are not teachers in the conducted and affiliated colleges, not exceeding 4, (nominated by the Syndicate).

The Advisory bodies generally consist of not more than 6 members. Each member is an expert in the subject concerned.

38. SRI VENKATESWARA UNIVERSITY

The Boards of Studies in different subjects frame the syllabuses, scrutinise question papers of previous years and recommend the names of paper setters and examiners. The regulations and syllabuses framed by the Boards of Studies are considered and approved by the Academic Council.

Members of the board other than ex-officio are appointed by the Syndicate on the recommendation of the ex-officio chairmen who are heads of the departments in respect of honours and postgraduate and pass boards. Composition of different boards is as given below :

HONOURS AND POSTGRADUATE BOARDS OF STUDIES

- (a) The university professor or head of the department in the subject,
- (b) The chairman of the corresponding pass board (ex-officio member),
- (c) Not fewer than three and not more than seven members of whom two are ordinarily external members.

PASS BOARDS OF STUDIES

- (a) The chairman of the Board of Honours and Postgraduate Studies (as ex-officio member).
- (b) No fewer than three and not more than six members (excluding ex-officio members)

COMBINED BOARDS OF STUDIES (PASS AND HONOURS)

- (a) The university professor or head of the department in the subject as ex-officio member
- (b) No fewer than three and not more than twelve members (excluding ex-officio members).

39. VIKRAM UNIVERSITY

Boards of Studies in different subjects have the power to recommend text books to the Faculty which in its turn recommends them to the Academic Council.

40. VISVA-BHARATI

The Board of Studies for each subject consists of the members of the staff of the department in that subject and one external member. The function of the board is to recommend courses of study and syllabuses to the Academic Council. The Academic Council finally approves the syllabuses.

APPENDIX 6

LIST OF UNIVERSITIES WHICH HAVE INTRODUCED THREE-YEAR DEGREE COURSE

S.No.	Name of the University	Year of Introduction
1.	2.	3.
1.	Aligarh Muslim University	1958-59
2.	Andhra University	1958-59
3.	Annamalai University	1958-59
4.	Banaras Hindu University	1960-61
5.	Bhagalpur University	1960-61
6.	Bihar University	1960-61
7.	Burdwan University	1960-61
8.	Calcutta University	1960-61
9.	Delhi University	1943-44
10.	Gauhati University	1962-63
11.	Gujarat University	1963-64
12.	Jabalpur University	1960-61
13.	Jadavpur University	1956-57
14.	Jammu & Kashmir University	1961-62
15.	Jodhpur University	1958-59*
16.	Kalyani University	1961-62
17.	Karnatak University	1958-59
18.	Kerala University	1957-58
19.	Kuruksetra University	1961-62**
20.	Madras University	1958-59
21.	Magadh University	1960-61*
22.	M.S. University of Baroda	1957-58
23.	Marathwada University	1958-59
24.	Mysore University	1958-59
25.	Nagpur University	1958-59
26.	North Bengal University	1960-61*
27.	Osmania University	1957-58
28.	Panjab University	1961-62
29.	Patna University	1960-61
30.	Poona University	1959-60
31.	Punjabi University	1961-62*
32.	Rabindra Bharati	1963-64
33.	Rajasthan University	1958-59
34.	Ranchi University	1960-61

1.	2.	3.
35.	Sardar Vallabhabhai Vidyapeeth	1958-59
36.	Saugar University	1956-57
37.	Shivaji University	1959-60*
38.	S.N. D.T. Women's University	1959-60
39.	Sri Venkateswara University	1958-59
40.	Utkal University	1960-61
41.	Vikram University	1959-60
42.	Visva-Bharati	1954-55

*The colleges now affiliated to the Universities of (i) Jodhpur, (ii) Magadh, (iii) North Bengal, (iv) Punjabi, and (v) Shivaji were previously affiliated to the Universities of (i) Rajasthan, (ii) Patna, (iii) Calcutta, (iv) Panjab, and (v) Poona respectively. The year of introduction of the three-year degree course scheme in these universities has been taken to be the same as the year in which the universities to which these colleges were originally affiliated, introduced the scheme.

** Year of introduction of the three-year degree composite course is 1961-62 and that of the three-year degree course 1963-64.

APPENDIX 7

OBSERVATIONS MADE BY THE UNIVERSITIES REGARDING THE GENERAL ASSESSMENT OF THE IMPACT OF THE THREE YEAR DEGREE COURSE

Sl. No.	Name of the University	Observations
1	2	3
1.	Aligarh Muslim University	Generally the standards have improved. They would have further improved if the three-year degree course was adopted by other universities in U.P. also.
2.	Andhra University	The non-recurring grants provided under the scheme certainly benefitted the affiliated colleges in improving the laboratories and general accommodation required for teaching purposes. The students are provided with facilities and as such the standards of undergraduate education will certainly improve. It is too early to estimate the impact of the scheme on the improvement of standards of undergraduate education.
3.	Annamalai University	The question has not yet been studied scientifically, but a slight improvement is noticeable.
4.	Banaras Hindu University	Standard is improving on account of intensive programme of lectures, seminars, tutorials and practicals.
5.	Bhagalpur University	The scheme has not improved the standard of education.
6.	Calcutta University	It is felt that the old scheme was working better. The present scheme has not attained the success hoped for. If, however, this is to be continued, vital changes are necessary with regard to curriculum, syllabus, time for examinations and

1	2	3
		improvement of standard of teaching in English and co-ordination with the higher secondary courses to make it more successful. It is desirable to consider whether the structure may be remodelled within the frame-work of the three-year degree course.
7.	Gauhati University	It has not been possible to assess the improvement of the courses of study after the introduction of the three-year degree course. But it is expected to improve the standard of education.
8.	Gujarat University	The first batch of graduates will come out in 1965. It is therefore not possible to make any assessment of its impact at this stage. Some important academic reforms have however been introduced to synchronize with the new pattern. These are (i) tutorial system (ii) internal evaluation (iii) general education. Lack of funds and personnel are serious handicaps.
9.	Jabalpur University	The three-year degree course scheme was introduced in the university with effect from 1960-61 and it is premature to judge the full impact of the same. Teaching facilities have no doubt improved in the colleges which have received grants under the scheme.
10.	Jadavpur University	A comparative assessment is not possible as the university introduced the new scheme of three-year degree course since its very inception.
11.	Jodhpur University	With an examination at the end of each year, students find it easier to prepare for the examinations. It is a step towards raising of standards. The three-year degree course should be continued.
12.	Karnatak University	As a result of the introduction of the three-year degree course, it has been possible to maintain fairly good academic standards, mainly because there is conti-

1	2	3
		<p>nuity in the teaching of certain subjects. A more intensive teaching of English is provided at the pre-university course, after which, the student when he enters upon the three-year degree course, will be in a better position to understand the lectures in English. All this was possible only because of the introduction of the three-year degree course. As a result of the liberal financial aid given under the scheme, the standard of education has considerably improved on account of better facilities by way of buildings, better laboratories and better library facilities etc.</p>
13. Madras University		<p>The scheme has led to all-round improvement in this university in the undergraduate sector of higher education.</p>
14. Magadh University		<p>The scheme has not improved the standard of education. In fact, it has lowered standards.</p>
15. M.S. University of Baroda		<p>The three-year course enables students to gain a deep and thorough knowledge of the subjects of study.</p>
16. Marathwada University		<p>It is the general experience of the teachers concerned that the quantum of knowledge imparted during the three-year degree course is in no way more than under the old two-year degree course.</p>
17. Mysore University		<p>The gap between the standard and quantum of the syllabi of the subjects studied at the secondary school level and at the P.U.C. level is so big that students coming from secondary schools require a considerable amount of time to adjust themselves to be able to follow the instruction at the P.U.C. level. The change of place and environment also contribute to this difficulty. This period varies between three and six months. Thus before the students are in a position to follow the lectures, they are faced with the approach of the examinations and</p>

1	2	3
		consequently their performance is not satisfactory.
18. Nagpur University		The university has appointed a committee to evaluate the working of the three-year degree course scheme. The report of the committee is under consideration of the university. (Final views of the university are still awaited.)
19. North Bengal University		Students joining the first year of the degree course find it difficult to follow lectures and text books on account of poor knowledge of English. Most of them are not found fit for university work.
20. Osmania University		Grants released under the scheme have considerably improved the physical and other facilities in the colleges. The colleges however, still need further assistance in this regard. The short duration of the pre-university course does not permit students to adjust themselves fully to the abrupt change in the medium of instruction from the school to the university level. The opinion of many seems to be that the old two-year intermediate course was better for this purpose particularly because there was no university examination at the end of the first year. Special efforts are thus called for to provide extra time, tutorials etc. to enable students to adjust themselves to the English medium especially in the case of those students who come from schools where the medium of instruction is not English.
21. Panjab University		It is too early to bring about any improvement.
22. Poona University		The three-year degree course has definitely increased the number of successful candidates at the university examinations.
23. Punjabi University		As a result of the introduction of the three-year degree course, congestion in colleges has been relieved and this is bound to have a salutary effect on standards.

1	2	3
24.	Sardar Vallabhbhai-Vidyapeeth	The standard of undergraduate education appears to have improved due to the (i) introduction of tutorial system, (ii) reduction in the number of students in one class, (iii) improvement of teacher-pupil ratio.
25.	Saugar University	There has been an all-round improvement.
26.	S.N.D.T. Women's University	It is felt that the standard of undergraduate education, consequent on the introduction of the three-year degree course has very much improved and strengthened.
27.	Sri Venkateswara University	The courses have been recently introduced and it is too early to assess their impact on the standards of undergraduate education.
28.	Visva-Bharati	It is too early to say anything very definitely. The university would rather prefer a 12-year school course leading to a three-year degree course to be followed by a one-year M.A. course.

APPENDIX 8

GRANTS PAID DURING 1963-64 FOR THE IMPLEMENTATION OF THE THREE-YEAR DEGREE COURSE SCHEME IN UNIVERSITIES AND AFFILIATED COLLEGES

Sl.No.	University	Non-Recurring	Recurring	Total
		(Rs.)	(Rs.)	(Rs.)
1.	Andhra	3,94,049	5,07,216	9,01,265
2.	Bhagalpur	1,80,213	3,55,123	5,35,336
3.	Bihar	6,44,322	3,48,826	9,93,148
4.	Burdwan	1,67,058	72,256	2,39,314
5.	Calcutta	5,19,781	7,45,125	12,64,906
6.	Gauhati	7,45,463	20,000	7,65,463
7.	Gujarat	6,20,000	1,00,000	7,20,000
8.	Jabalpur	1,47,748	69,433	2,17,181
9.	Karnatak	15,609	82,761	98,370
10.	Kerala	5,64,797	9,90,955	15,55,752
11.	Madras	8,25,710	42,617	8,68,327
12.	Magadh	3,88,018	2,57,198	6,45,216
13.	Marathwada	47,070	41,815	88,885
14.	Mysore	2,59,539	2,62,594	5,22,133
15.	Nagpur	82,730	3,14,678	3,97,408
16.	North Bengal	1,01,508	1,31,004	2,32,512
17.	Osmania	3,511	—	3,511
18.	Panjab	10,84,285	12,23,414	23,07,699
19.	Patna	—	1,80,420	1,80,420
20.	Poona	—	4,00,000	4,00,000
21.	Punjabi	81,348	48,494	1,29,842
22.	Rajasthan	80,611	1,83,313	2,63,924
23.	Ranchi	3,09,416	—	3,09,416
24.	S.V. Vidyapeeth	—	80,954	80,954
25.	S.N.D.T. Women's	1,01,391	1,30,549	2,31,940
26.	Sri Venkateswara	41,849	2,01,110	2,42,959
27.	Utkal	4,244	30,786	35,030
28.	Vikram	62,781	1,12,472	1,75,253
Total		74,73,051	69,33,113	1,44,06,164

DURATION OF THE COURSES—STATEWISE

State/Territory	Middle stage		Duration in years	High/higher secondary stage		Duration in years	Duration of secondary stage
	Names of classes			Names of classes			
Andhra Pradesh	VI, VII and VIII		3	IX, X, XI and XII		4	7
Assam	IV, V and VI		3	VII, VIII, IX & X		4	7
Bihar	VI and VII		2	VIII, IX, X & XI		4	6
•Bombay	V, VI and VII		3	VIII, IX, X and XI		4	7
Jammu & Kashmir	VI, VII & VIII		3	IX and X		2	5
Kerala	Standards V, VI & VII		3	Standards VIII, IX, X and XI		4	7
Madhya Pradesh	VI, VII and VIII		3	IX, X and XI		3	6
Madras	Forms I, II & III of Secondary Schools/Standards VI, VII and VIII of Higher Elementary Schools		3				
•Mysore	Forms I, II & III		3	Forms IV, V & VI		3	6
Orissa	VI and VII		3	Forms IV, V & VI		3	6
Panjab	VI, VII and VIII		2	VIII, IX, X, XI & XII		5	7
Rajasthan	VI, VII and VIII		3	IX & X		2	5
Uttar Pradesh	VI, VII & VIII		3	IX, X and XI		3	6
West Bengal	V, VI, VII & VIII		4	IX and X		2	5
A.N. Islands	VI, VII and VIII		3	IX, X and XI		3	7
D:hi	VI, VII and VIII		3	IX, X and XI		3	6
Himachal Pradesh	VI, VII and VIII		3	IX, X and XI		3	6
L.M. & A. Islands	VI, VII and VIII		3	IX and X		2	5
Manipur	III, IV, V & VI		3	—		—	3
NEFA	IV, V and VI		4	VII, VIII, IX & X		4	8
Pondicherry	Forms I, II and III		3	VII, VIII, IX & X		4	7
Tripura	VI, VII and VIII		3	Forms IV, V & VI		3	6
			3	IX, X and XI		3	6

Source : —Education in India 1959-60 Vol. I (Ministry of Education)

• Erstwhile areas of these States have been taken.

APPENDIX 10

SUMMARY OF THE RECOMMENDATIONS OF THE REVIEW COMMITTEE IN ENGLISH FOR STRENGTHENING THE TEACHING OF ENGLISH IN THE P.U.C./ FIRST YEAR OF THE UNIVERSITY COURSE

The university may organise special course of 3 to 4 weeks duration during the summer vacation or during the vacation between the first and second term for students who are weak in English. Some universities could also arrange special classes in English during the first term by cutting down laboratory work for science students and tutorials for arts students. Alternatively, English classes could be held outside the normal working hours of the university or college. In addition to these special remedial courses the pre-university course should provide 8 periods per week in English comprising 3 lecture periods and the rest tutorials. The aim of the language course in the pre-university class should be to expand vocabulary, to establish control over structures and to improve the student's reading comprehensions. The best way of doing this is to encourage the students to speak in English on familiar themes and also in the course of conversation. It would also be necessary during this period to help the students in the use of English in the study of other subjects. A major difficulty of the pre-university student is to understand the technical terms in English used in these subjects. This is a direct outcome of the position taken in several states to translate technical terms into regional languages and to use them for school textbooks. In some states, the international terminology was also to be used along with the translated words. This has been mostly neglected. A systematic attempt will therefore have to be made in the pre-university to acquaint the student with the new terminology. The technical and other special words must be collected together and given to the pre-university student in the form of exercises.

APPENDIX 11

ADMISSION QUALIFICATIONS FOR RESEARCH COURSES

1. Agra University (a) M.A., M. Stat., M.S.W., M.Ed. M. Com, M.Sc. M.Sc. (Ag), M.V.Sc. or B.V.Sc. and A.H. (with six years research experience) of this university or of any other university incorporated by any law for the time being in force and recognised by the Executive Council or
 (b) A person, with above qualifications, working as a teacher in any college affiliated to the university or
 (c) M. Litt of Agra University who took his degree with thesis in lieu of five papers and is of one year's standing at the time of submission of thesis.

No one is eligible to supplicate for the Ph.D. degree in the university unless he/she secured at least second class marks (in case of V.Sc. 50% at the qualifying examination) at the Master's degree examination or he/she is a postgraduate teacher of at least five years' standing or he/she is a person, who has already done research work and has published some papers in recognised research journals and whose work is approved by the Research Degree Committee in the subject concerned.

2. Allahabad University Postgraduate degree in the subject from a recognised university.
3. Andhra University Master's degree in the subject concerned.
4. Annamalai University A candidate who has qualified for the degree of Master of Arts or Science or Oriental Learning or Commerce or Education in the faculties concerned.
5. Banaras Hindu University M.A./M.Sc. for subjects in Arts/Science Faculties; B.Sc. in technical subjects; M. Sc. (Ag) in the Faculty of Agriculture.
6. Bhagalpur University At least a second class Master's degree.
7. Bihar University At least a second class Master's degree.
8. Bombay University Bachelor's or Master's degree except in the Faculty of Medicine in which a candidate must hold a Master's degree.
9. Calcutta University Master's degree.
10. Gauhati University Master's degree.

11. Gorakhpur University Postgraduate degree in the subject.
12. Gujarat University Master's degree in the faculty concerned.
13. Jabalpur University At least a second class Master's degree. In case of third divisioners 5 years teaching experience or published research papers are required.
14. Jadavpur University Master's degree.
15. Jammu & Kashmir University Master's degree.
16. Jodhpur University Postgraduate degree.
17. Kalyani University High II class Master's degree with ability and aptitude for research.
18. Karnatak University Master's degree in the subject concerned.
19. Kerala University M.A./M.Sc.
20. Kuruksetra University First or second class Master's degree.
21. Madras University Master's degree.
22. Magadh University At least a second class Master's degree.
23. Marathwada University Master's degree by papers. A candidate should have obtained his Master's degree in first or second division or at least his Bachelor's degree in first or second division or he must have obtained his Master's degree by thesis.
24. M.S.University of Baroda Arts : Master's degree in the subject.
Science : Generally, M.Sc. II class but M.Sc. (pass class) with some research experience are also admitted.
25. Mysore University M.A./M.Sc. or B.A./B.Sc. (Hons). Graduates of other universities are also allowed under certain conditions.
26. Nagpur University Master's degree in the faculty concerned.
27. North Bengal University M.A./M.Sc.
28. Osmania University Master's degree with first or second class.

29. Panjab University M.A. or M.Sc. degree of 3 years' standing.
30. Patna University At least a second class Master's degree.
31. Poona University Master's degree in the faculty.
32. Punjabi University Master's degree in the subject of research or in an allied subject.
33. Rabindra Bharati A good Master's degree.
34. Rajasthan University Postgraduate degree of 2 years' standing at the time of conferment of the Ph.D. degree.
35. Ranchi University At least a second class Master's degree in the subject.
36. Roorkee University Master's degree.
37. S.V.Vidya-peeth
 - (i) A Master's degree in the subject to which the candidate seeks admission. Notwithstanding the above qualification, a candidate who has obtained the Master's degree may be admitted for Ph.D. in another subject provided a special committee appointed by the Syndicate approves of it.
 - (ii) For admission to the Ph.D. degree in Agriculture the candidate should possess M.Sc. (Ag) or M.Sc. degree in the relevant subject.
38. Saugar University Master's degree with aptitude for research.
39. S.N.D.T. Women's University M.A.
40. Sri Venkateswara University M.A./M.Sc. with at least a second class.
41. Varanaseya Sanskrit Vishvavidyalaya Acharaya or M.A. degree in Sanskrit or Pali or Prakrit for Vidya Varidhi.
42. Vikram University At least a second class M.A. or a postgraduate teacher of five years' standing or one who has published research work approved by the Research Degree Committee.
43. Visva-Bharati At least a second class M.A.

Minimum qualifications for admission to D. Litt/D.Sc.

1. Agra
 - (a) Ph.D. of the university of at least two years' standing or
 - (b) Ph.D. of at least 2 years' standing of any other university recognised for the purpose by the Executive Council who has been resident within the territorial limits of the university for at least five years, or
 - (c) M.A., M.Stat., M.Sc. M.Com. M.Sc. (Ag), M.V.Sc. of this university of at least 5 years' standing, or
 - (d) M.A., M.Sc., M.Com, M.Sc. (Ag.), M.V.Sc. of a university recognised for the purpose by the Executive Council, residing within the territorial limits of the university for at least five years, or
 - (e) a teacher of at least three years' standing of any affiliated college of Agra University with the above qualifications (as indicated in c)
 - (i) Candidates referred to in clauses (c), (d) and (e) should satisfy the Research Degree Committee that the work already done by them is of sufficient merit to earn exemption from the Ph.D. degree.
 - (ii) Candidates referred to in clauses c, d & e must have obtained at least second class marks (in case of Vet. Sc. 50% in the qualifying examination) at the Master's degree examination or he/she must be a postgraduate of at least five years' standing.
2. Annamalai University

A candidate who has obtained the degree of Doctor of Philosophy of this university or of any other university recognised by the Syndicate as equivalent thereto may present himself for the degree of D. Litt/D.Sc. two years after having qualified for the degree of Ph.D. provided however, that a candidate who has taken the Ph. D. degree of any other university shall have subsequently carried on his research work at this university for a period of not less than 2 years prior to presenting himself for the degree of D.Sc./D.Litt.
3. Bhagalpur University

Ph.D. degree or valuable contribution to the subject of D.Litt.
4. Bombay University

Bachelor's, Master's or Doctorate degree of requisite standing.
5. Calcutta University

Master's degree.
6. Jabalpur University

Ph. D. of three years' standing or Master's degree of 6 years' standing.

7. Jadavpur University Bachelor's or Master's degree of this university or postgraduate degree of any recognised university.
8. Madras University Ph.D.
9. Magadh University Three years of further research after Ph.D. A teacher after 3 years of teaching can also submit a thesis for D. Litt.
10. Mysore University B.A./B.Sc., M.A./M.Sc. with a standing of a given number of years.
11. Panjab University Six years after the Master's degree.
12. Punjabi University Six years after the Master's degree and should have made significant contribution to learning.
13. Sri Venka-
teswara
University Ph.D. of this university.

APPENDIX 12

STANDARDS OF RESEARCH

1. Agra University (i) The thesis must be a piece of research work characterised either by the discovery of facts or by a fresh approach towards the interpretation of facts or theories. In either case, it should evince the candidate's capacity for critical examination and sound judgment. The candidate shall communicate how far the thesis embodies the results of his own observations and in what respects his investigations appear to him to advance knowledge in the subject.
(ii) It should be satisfactory so far as its literary presentation is concerned and must be in a form suitable for publication.
2. Andhra University For all research courses original contribution to knowledge in the field is insisted upon. The research thesis should show evidence of the candidate's own work whether based on the discovery of new facts observed by him or of new relation of facts observed by others, whether constituting an exhaustive study and criticism of the published works of others or otherwise forming a valuable contribution to the literature of the subject dealt with or tending generally to the advancement of knowledge.
3. Annamalai University *Ph.D.* Independent and formative work on the part of the candidate.
D.Litt. Original contribution to the advancement of knowledge.
D.Sc. Distinct contribution to scientific knowledge.
4. Banaras Hindu University The thesis shall comply with the following conditions to merit the award of the degree.
Ph.D.
 - (a) It must be a piece of research work, characterised either by the discovery of new facts or by a fresh approach towards interpretation of facts and theories and shall state the material published or unpublished used by the candidate.
 - (b) It should evince the candidate's capacity for critical examination and judgment.
 - (c) It shall also be satisfactory in so far as its literary presentation is concerned.

D.Litt: The work of the candidate shall comply with the following conditions to merit the award of the degree.

- (a) It must be a substantial work making a distinct addition to learning in one or more branches of studies within the purview of the Faculty of Arts.
- (b) It must be original in the sense of opening up new fields of research, or of making a marked advance on the results of previous investigations, or of giving a new interpretation to facts already known.
- (c) It must be a scholarly work of high merit.
- (d) It must not be a work done conjointly with any other person but must be of the candidate alone.
- (e) It must have been published not less than one year prior to the date of supplication.

5. Bhagalpur University Discovery of new facts, fresh interpretation of facts, capacity for critical judgment, advancement of knowledge and literary excellence in presentation are required. The thesis must be suitable for publication.

6. Jadavpur University *Ph.D.* The thesis should show advancement of knowledge as embodied in the work of the candidate. The candidate is also expected to show his broad knowledge of the branch of Science or subject in which he has specialised.

D.Litt/D.Sc. The thesis should embody the result of the original research carried out independently by the candidate showing evidence of his work based on the discovery of new facts observed by him or of new relations of facts observed by others and it should tend, generally, to the advancement of Science or Arts.

7. Jodhpur University The thesis should be an original piece of research and contribute to knowledge either from the point of discovery of new facts or interpretation of existing facts or both. It must show consistent thinking and critical approach on the part of the candidate. It must be his own work. It should be satisfactory so far as its literary presentation is concerned and must be in a form suitable for publication.

8. Karnatak University A discovery of new facts or a new relation in existing facts, interpretation of existing facts or theories, or an advancement of the present knowledge, capacity for critical judgment as well as literary presentation.

9. Kuruksetra University Highest standards involving original thinking, critical judgement etc. are expected of a research scholar. He is expected to contribute to the advancement of knowledge.
10. Madras University *D.Litt*: The thesis shall be in the form of published work, or published papers or books, that contain original contribution to the advancement of knowledge.
D.Sc: The thesis shall be in the form of published work, or published papers or books that make a distinct contribution to scientific knowledge.
11. M.S. University of Baroda Standards such as discovery of new facts, fresh interpretation of existing facts or theories, advancement of knowledge, capacity for critical judgment, literary presentation etc. are expected of the candidate qualifying for a research degree.
12. Panjab University The thesis must embody candidate's own work.
13. Punjabi University *Ph.D.* The thesis must be a piece of research work characterised either by the discovery of new facts or by a fresh interpretation of facts or theories and should show the candidate's capacity for critical examination and judgement and for lucid presentation.
D.Litt./D.Sc. The candidate must have made significant published contribution to learning.
14. Rabindra Bharati Discovery of new facts, fresh interpretation of existing facts or theories, advancement of knowledge, capacity for critical judgement and literary presentation.
15. Rajasthan University It must be a piece of research work characterised either by discovery of facts or by a fresh approach towards interpretation of facts or theories. In either case, it should prove the candidate's capacity for critical examination and sound judgement. It shall also be satisfactory in respect of its literary presentation and must be in a form suitable for publication.
16. Roorkee University *Ph.D.* The thesis should be a balanced presentation of the subject and not a short technical paper. It should add appreciably to the existing knowledge.
17. S.V. Vidya-peeth Though the standards are not specifically laid down for the award of research degrees, the referees appointed for examining the thesis generally take into consideration all the factors stated in the questionnaire.

18. Varanaseya Sanskrit Vishwa-vidyalaya The thesis must be a piece of research work characterised either by the discovery of new facts or by a fresh approach towards interpretation of facts or theories. In special cases the thesis may be a critical edition of manuscripts. The work should evince the candidate's capacity for critical examination and judgement. It shall also be satisfactory in so far as its literary presentation is concerned and must be suitable for publication.
19. Vikram University Discovery of new facts and fresh interpretation of existing facts.
20. Visva-Bharati Discovery of new facts and/or fresh interpretation of existing facts or theories and/or capacity for critical judgement. Advancement of knowledge and literary excellence in presentation are required in every case.

APPENDIX 13

AGENCIES FOR ADMISSION TO RESEARCH COURSES

1. Agra University
 - (a) Research Degree Committee
 - (b) Academic Council
 - (c) Executive Council
2. Andhra University
 - (a) Vice-Chancellor
 - (b) Principal of College
 - (c) Head of the Department
 - (d) Director of Research
3. Annamalai University
 - (a) Vice-Chancellor
 - (b) Committee at the discretion of the Vice-Chancellor
4. Banaras Hindu University
 - (a) Departmental Research Committee
 - (b) Research Degree Committee
5. Bhagalpur University
 - (a) Guide
 - (b) Research Board
 - (c) Academic Council
6. Gauhati University
 - (a) Vice-Chancellor
 - (b) Dean of Faculty
 - (c) Head of the Department
 - (d) Secretary, University classes
7. Jabalpur University
 - (a) Guide
 - (b) Departmental Committee of Research.
 - (c) General Committee of Research
 - (d) Academic Council
8. Jadavpur University
 - (a) Supervisor
 - (b) Head of Department
 - (c) Doctorate Committee
9. Jodhpur University
 - (a) Head of the department
 - (b) Dean of the Faculty
 - (c) Research Board
10. Karnatak University
 - Guide
11. Kuruksetra University
 - (a) Head of the Department
 - (b) Board of Studies
 - (c) Faculty
 - (d) Academic Council
 - (e) Committee of Admissions

12. Madras University (a) Head of the Department
(b) Syndicate
13. M. S. University of Baroda (a) Guide
(b) Head of the Department
(c) Dean
(d) Council of Postgraduate Studies.
14. Panjab University (a) Supervisor
(b) Head of the Department
(c) Research Degree Committee
(d) Research Board
(e) Academic Council.
15. Patna University (a) Faculty
(b) Academic Council
16. Punjabi University (a) Board of Postgraduate Studies and Research
(b) Supervisor
(c) Academic Council
(d) Syndicate
(e) Senate.
17. Rabindra Bharati (a) Executive Council
(b) Selection Committee
18. Rajasthan University (a) Guide
(b) Research Board
19. Roorkee University (a) Research Degree Committee
(b) Syndicate.
20. S.V. Vidya-peeth (a) Guide
(b) Head of the Department
21. Sri Venkateswara University (a) Vice-Chancellor
(b) Principal
(c) Head of the Department.
22. Varanaseya Sanskrit Vishva-vidyalaya (a) Director
(b) Research Degree Committee
(c) Academic Council
23. Vikram University (a) Research Degree Committee
(b) Academic Council
(c) Syndicate
24. Visva-Bharati (a) Head of the Department
(b) Adhyaksha, Vidya Bhavana
(c) Shiksha-Samiti.

APPENDIX 14

TEACHER—PUPIL RATIO—FACULTYWISE

	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	1962-63	
	1	2	3	4	5	6	7	8
1. Agra University								
Institute of Social Sciences								
M.A.				1:15				
M.S.W.	—	—		1:15				
M. Statistics	—	—		1:12				
K.M. Institute Arts	—	1:9	1:17	1:19	1:20	1:25	—	
			(including certificate courses)					
2. Andhra University								
Arts			1:7					
Science								
Commerce			1:6					
								University and affiliated colleges
3. Annamalai University								
Arts	—	1:13	1:13	1:12	1:9	1:8	—	
Science	—	1:9	1:4	1:11	1:10	1:11	—	
4. Bihar University								
Arts & Science	—	—	—	1:29	1:27	1:26	1:24	
Commerce	—	—	—	1:35	1:32	1:37	1:35	
5. Bombay University								
Arts & Science	—	1:24	1:25	1:26	1:24	1:23	—	
Commerce	—	1:36	1:37	1:36	1:33	1:26	—	
6. Calcutta University								
Arts	—	—	—	—	—	—	1:23	
Science	—	—	—	—	—	—	1:5	
Commerce	—	—	—	—	—	—	1:61	
			(The ratio varies in the affiliated colleges)					
7. Gauhati University								
Arts	—	1:19	1:19	1:18	1:18	1:21	—	
Science	—	1:7	1:6	1:7	1:5	1:4	—	
Commerce	—	1:14	1:17	1:23	1:30	1:26	—	
8. Gorakhpur University								
Arts		1:18						
Science		1:11						
Commerce		1:25						

1.	2.	3.	4.	5.	6.	7.	8.
9. Gurukul Kangri Vishvavidyalaya							
Arts		1:3					
Science		1:10					
Ayurveda		1:4					
10. Jabalpur University							
Arts & Science	—	1:14	1:18	1:20	1:17	1:18	1:16
Commerce	—	1:29	1:33	1:43	1:42	1:38	1:36
11. Jadavpur University							
Arts	—	1:5	1:6	1:7	1:8	1:9	—
Science	—	1:5	1:5	1:5	1:5	1:5	—
(including Pre-university)							
12. Jodhpur University							
Arts		1:16					
Science		1:11					
Commerce		1:28					
13. Kalyani University							
Arts		1:9					
Science		1:3					
Agriculture		1:12					
(For the year 1963-64)							
14. Karnatak University							
Postgraduate departments of university.							
Arts		1:12	1:10	1:9	1:11	1:13	—
Science	—	1:10	1:6	1:6	1:7	1:8	—
University colleges.							
Arts	—	—	1:16	1:12	1:11	1:11	—
Science	—	—	1:14	1:11	1:9	1:9	—
Affiliated Colleges							
Arts	—	1:20	1:20	1:19	1:16	1:14	—
Science	—	1:16	1:16	1:15	1:14	1:12	—
Commerce	—	1:17	1:22	1:24	1:28	1:23	—
15. Kuruksetra University							
Arts and languages	—	—	—	—	—	—	1:7
Science	—	—	—	—	—	—	1:4
Social Sciences	—	—	—	—	—	—	1:6
Indic Studies	—	—	—	—	—	—	1:3
16. Madras University							
1:14 (The ratio may slightly vary from college to college)							
17. Magadh University							
1:15 (Total) It varies from 1:55 in postgraduate departments to 1:30 in affiliated colleges.							
18. Marathwada University							
Arts	—	—	1:14	1:15	1:13	1:15	1:16
Science	—	—	1:30	1:24	1:21	1:24	1:29
Commerce	—	—	1:22	1:30	1:37	1:57	1:78

	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	1962-63
1.	2.	3.	4.	5.	6.	7.	8.
19. M.S. University of Baroda							
Arts	—	—	1:13	1:12	1:12	1:12	1:15
Science	—	—	1:7	1:7	1:7	1:7	1:8
Commerce	—	—	1:29	1:36	1:36	1:38	1:36
20. Mysore University				1:17	1:17	1:15	—
21. Nagpur University							
Arts	—	—	—	1:26	1:24	1:25	1:22
Science	—	—	—	1:19	1:18	1:17	1:16
Commerce	—	—	—	1:64	1:57	1:67	1:68
22. North Bengal University							
Arts				1:6			
Science				1:5			
23. Osmania University							
Arts	—	—	—	1:13	1:12	—	—
Science	—	—	—	1:15	1:15	—	—
Commerce	—	—	—	1:30	1:27	—	—
24. Panjab University							
Arts and Science	1:23	1:24	1:24	1:24	1:21	—	—
Commerce	1:6	1:8	1:8	1:11	1:10	—	—
25. Punjabi University							
Arts/Science	—	—	—	—	—	—	1:16
Commerce	—	—	—	—	—	—	1:28
26. Poona University							
Arts	—	—	1:2	1:2	1:2	1:2	1:3
Science	—	—	1:7	1:6	1:8	1:6	1:6
27. Rajasthan University							
Arts and Science	—	1:6	1:7	1:10	—	—	—
Commerce	—	1:12	1:13	1:18	—	—	—
28. S.V. Vidyapeeth							
Postgraduate departments							
Arts	—	—	—	1:4	1:4	1:4	1:5
Science	—	—	—	1:9	1:9	1:8	1:7
Commerce	—	—	—	1:9	1:33	1:11	1:10
Colleges							
Arts	—	—	—	1:19	1:15	1:23	1:21
Science	—	—	1:18	1:16	1:16	1:19	1:17
Commerce	—	—	1:18	1:22	1:20	1:25	1:29
29. S.N.D.T. Women's University							
Arts Undergraduate					1:20		
Postgraduate					1:10		
Home Science Undergraduate					1:10		
30. Varanaseya Sanskrit Vishvavidyalaya							
Arts	—	—	1:13	1:9	1:15	1:7	1:11
31. Visva-Bharati							
Arts and Science	—	1:5	1:5	1:4	1:5	1:4	—

APPENDIX 15

QUALIFICATIONS FOR APPOINTMENT TO TEACHING POSTS

1. Allahabad University

Professor High academic qualifications with at least 5 years' teaching experience. The candidate must have reputation for scholarship and ability to guide and conduct research.

Reader A good Master's degree. The candidate must have a reputation for sound scholarship. Preference is given to one who has at least 5 years' teaching or research experience.

Lecturer A good Master's degree preferably with teaching and research qualifications.

2. Andhra University

Professor

- (i) I or II class Master's degree.
- (ii) Doctorate degree or published work of a high standard.
- (iii) At least 5 years' teaching experience for Science subjects and at least 10 years' teaching experience for Humanities at the honours and postgraduate levels and experience of guiding research.

Reader

- (i) I or II class Master's degree.
- (ii) Doctorate degree or published work of a high standard.
- (iii) Five years' teaching experience.

Lecturer I or II class Master's degree.

3. Annamalai University*

Professor Research qualifications of not less than the Master's degree by research besides the basic academic qualification of an honours degree, adequate experience of advanced teaching and research and scholarship of repute.

Reader Besides the basic academic qualification of an honours degree, the person should have made a mark in the world of scholarship either by possessing a research degree or by having published papers in

*The qualifications are being modified.

well—established and recognised journals. (Appointment to reader's post is ordinarily made from among the lecturers who have put in not less than 10 years' service as teachers and who satisfy the above qualifications).

Lecturer I or II class B.A. (Hons) or B.O.L. or Master's degree or a professional degree with honours or a I or II class degree of a recognised university. Previous research experience is an additional qualification .

4. Banaras Hindu University

Professor (i) I or II class Master's degree.
(ii) Either a research degree of doctorate standard or published work of high standard.
(iii) About ten years' experience of teaching and some experience of guiding research.

Reader (i) I or II class Master's degree.
(ii) Research degree or published work of a high standard.
(iii) About 5 years' experience of teaching and some experience of guiding research.

Lecturer I or II class Master's degree.

5. Bhagalpur University

Professor High academic qualifications, research work and published work of high standard. Ten years' teaching experience of postgraduate classes and experience of guiding research.

Reader High second class Master's degree and at least ten years' teaching experience of honours or postgraduate classes.

Lecturer Master's degree preferably in the second or first class.

6. Bihar University

Professor 8 years' teaching experience or a research degree with 5 years' teaching experience.

Lecturer Second class Master's degree.

7. Bombay University

ARTS

Professor (i) D. Litt. or D.Sc. or
(ii) Ph. D. with B.A. & M.A. at least in II class or

- (iii) Ph.D. with B.A. in I class or
- (iv) M.A. II with foreign qualifications or
- (v) M.A. I or B.A. (Hons.) I of a foreign university or
- (vi) Ph.D. & B.A. II with 3 years' teaching experience or
- (vii) M.A II & B.A. II with 5 years' experience or
- (viii) Ph.D. with B.A. & M.A., at least one of which in II class with 5 years' experience.

Lecturer

- (i) M.A./M.Sc. II or
- (ii) B.A./B.Sc. I or
- (iii) B.A./B.Sc. II and M.A./M.Sc. Pass with 2 years' experience as a tutor or
- (iv) B.A./B.Sc. (Hons.) II of a foreign university or
- (v) Ph.D. degree.

8. Calcutta University

Teacher

- (i) I class M.A. or M.Sc. with 3 years' experience as a teacher upto honours standard or as a research worker.
- (ii) M.A./M.Sc. II with publications of sufficient merit.
- (iii) Foreign degree accepted by the selection committee.

9. Delhi University

Professor

A scholar of eminence. Independent published work of high standard and experience of teaching postgraduate classes and guiding research for a considerable period of time.

Reader

Good academic record with first or high second class M.A./M.Sc. with a doctor's degree or equivalent published work. Independent published work with at least 5 years' teaching experience.

Lecturer

Good academic record with first or high second class M.A./M.Sc. degree. Evidence of published work, advanced studies or experience of teaching for not less than 2 years.

10. Gauhati University

Professor

I or II class Master's degree with a doctorate degree and sufficient teaching experience.

Reader
Lecturer

—do—

I or II class Master's degree with doctorate degree.

11. Gorakhpur University

Professor

An eminent scholar with capacity to guide research.

Reader

I class Master's degree or II class with Ph.D. and 5 years' experience.

Lecturer

I class Master's degree or II class with Ph.D.

12. Gujarat University

Professor

- (i) D.Litt. or D.Sc. or
- (ii) Ph.D. with M.A. & B.A. II or
- (iii) Ph.D. with B.A. I or
- (iv) M.A. II & B.A. (Hons.) II from a foreign university or
- (v) M.A. II from a foreign university or
- (vi) M.A. I or
- (vii) Ph.D. & B.A. II or M.A. Pass with 3 years' experience or
- (viii) B.A. I & M.A. II or
- (ix) B.A. II & M.A. II with 5 years' teaching experience or
- (x) B.A. II & M.A. Pass or B.A. Pass & M.A. II with seven years' teaching experience or
- (xi) B.A. Pass & M.A. Pass with 10 years' teaching experience.

Lecturer

- (i) M.A. II or
- (ii) B.A. I or
- (iii) B.A. II, M.A. Pass with 2 years' experience or
- (iv) B.A. Pass & M.A. Pass with 7 years' experience as a tutor.

13. Gurukul Kangri Vishvavidyalaya

Professor

M.A. I or II class with experience of postgraduate and published research work, preferably a doctorate in the subject.

Lecturer

M.A. I or II class preferably with teaching experience.

14. Jabalpur University

Postgraduate
teacher

Research degree and one year's teaching experience or Master's degree in I or II division with 3 years' teaching experience.

Undergraduate
teacher

I or II class postgraduate degree.

15. Jadavpur University

Professor

- (i) First or high second class Master's degree.
- (ii) Research degree of a doctorate standard or published work of high standard.
- (iii) 10 years' teaching experience of postgraduate classes in case of Humanities and 5 years in case of Science subjects.
- (iv) Experience of research guidance.

Reader

- (i) First or high second class Master's degree.
- (ii) Research degree of doctorate standard or published work of high standard.
- (iii) 5 years' experience of teaching of postgraduate classes.
- (iv) Some experience of guiding research.

Lecturer

First or high second class Master's degree.

16. Jammu & Kashmir University

Professor

- (i) I or II class Master's degree.
- (ii) Research degree and ability to guide and conduct research.
- (iii) Specialisation in the concerned subject.
- (iv) Teaching experience of ordinarily ten years (not less than 5 years in any case).

Reader

- (i) I or II class Master's degree.
- (ii) Research degree or published work.
- (iii) Teaching experience of about 5 years (but not less than 3 years).

Lecturer

- (i) I or II class Master's degree.
- (ii) 5 years' teaching experience for a second class candidate.
3 years' teaching experience for a first class candidate.

17. Jodhpur University

Teacher

I class Master's degree or II class Master's degree with 3 years' teaching experience.

18. Karnatak University

Professor

M.Sc., D. Litt. or Ph.D. with a first class in at least one of the degree examinations. 10 years' teaching experience of postgraduate classes; capacity to carry on independent research and guide students in research work.

Reader Ph.D. with a first class in one of the degree examinations or an honours degree of a British university. Five years' teaching experience of postgraduate classes; capacity to carry on independent research and guide research students.

Lecturer Master's degree with I class or M.A. II with B.A. I or M.Sc. by research with B.Sc. I with at least 5 years' teaching experience.

19. Kuruksetra University

Professor

- (i) First or high second class Master's degree.
- (ii) Research degree of doctorate standard or published work of high standard.
- (iii) 10 years' teaching experience of postgraduate classes in case of Humanities and 5 years in case of Science subjects.
- (iv) Experience of research guidance.

Reader

- (i) I or high II class Master's degree.
- (ii) Research degree of doctorate standard or published work of high standard.
- (iii) 5 years' experience of teaching postgraduate classes.
- (iv) Some experience of guiding research.

Lecturer First or high second class Master's degree.

20. Kerala University

Professor

- (i) I or II class Master's degree.
- (ii) Research degree of doctorate standard or published work of high standard.
- (iii) 10 years' teaching experience.
- (iv) Experience of research guidance.

Reader

- (i) I or II class Master's degree.
- (ii) Research degree of doctorate standard or published work of high standard.
- (iii) 5 years' experience of teaching and some experience of research guidance.

Lecturer First or high second class Master's degree.

21. Magadh University

Reader First or high second class Masters' degree with 10 years' postgraduate teaching experience and experience of guiding research.

Lecturer First or high second class.

22. Madras University

Teacher

First or second class Master's degree. The teachers for postgraduate classes should have at least 4 years' teaching experience.

23. Marathwada University

Teachers
recognised for
postgraduate
teaching

Master's degree in the first class or with distinction and Bachelor's degree in at least second class and 3 years' teaching experience, or

Master's degree in at least second class with Bachelor's degree in at least second class and 5 years' experience, or

Master's degree with a Bachelor's degree in at least second class and 5 years' experience of teaching, or

Ph.D., D.Litt or D.Sc. with 3 years' experience.

24. M.S. University of Baroda

Professor

(i) I or II class Master's degree.

(ii) Either a research degree of doctorate standard or published work of a high standard.

(iii) About ten years' experience of teaching and some experience of guiding research.

Reader

(i) I or II class Master's degree.

(ii) Research degree or published work of high standard.

(iii) About 5 years' experience of teaching and some experience of guiding research.

Lecturer

I or II class Master's degree.

25. Mysore University

Professor/
Reader

I or II class Master's degree (or I or II class honours degree with a research degree) with 5 years' teaching experience and capacity to carry on independent research and to guide students for research degree. Publication of work of high standard desirable.

Lecturer

I or II class Master's degree or honours degree (2 year's teaching experience or published work of high standard or research degree desirable).

26. Nagpur University

Professor

A high second class Master's degree and research degree of doctorate standard and published work

of high repute. Ten years' postgraduate teaching experience.

Reader	At least a high second class Master's degree in the subject and a research degree or published research work of repute; ability to guide research; 10 years' teaching experience in the colleges of which not less than 5 years to postgraduate classes.
Lecturer	I or II class Master's degree.

27. North Bengal University

Teacher	At least a second class Master's degree
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28. Osmania University

Professor	(i) I or II class Master's degree. (ii) Either a research degree of doctorate standard or published work of high standard. (iii) About ten years' experience of teaching and some experience of guiding research.
Reader	I or II class Master's degree.

29. Panjab University

Professor	Brilliant academic career followed by outstanding research. Ten years' teaching experience of postgraduate classes or post-doctoral research and competence to guide research.
Reader	At least a second class Master's degree with Ph.D. or D.Litt. Research experience and teaching experience of 5 years.
Lecturer	I or II class Master's degree.

30. Patna University

University Professor	(i) I or II class Master's degree. (ii) Research degree of doctorate standard or published work (iii) 10 years' teaching experience. (iv) Experience of guiding research.
Professor	(i) At least a second class Master's degree. (ii) Research degree or 5 years' teaching experience in postgraduate classes or 12 years' teaching experience in a college or postgraduate department.
Reader	(i) At least a second class Master's degree, (ii) Research degree or 5 years' teaching experience

Lecturer	(iii) Experience of conducting research. At least a second class Master's degree.
31. Poona University	
Postgraduate teachers	(i) I or II class Master's degree or Master's degree by research or I or II class Bachelor's degree with a Master's degree in a subject in which the same is not awarded with classes or Doctor's degree with at least a second class Bachelor's degree. (ii) 5 years' teaching experience to post-intermediate classes or some published independent research work other than the work done for Ph.D. degree. A doctor's degree with a second class Master's degree or the Master's degree by research is also considered as sufficient qualification for appointment of postgraduate teachers.
32. Punjabi University	
Professor	(i) I or II class Master's degree. (ii) Either a research degree of doctorate standard or published work of high standard. (iii) About 10 years' experience of teaching or post-doctoral research. (iv) Some experience of guiding research.
Reader	Same as for professor
Lecturer	(i) I or II class Master's degree with some published work. (ii) About 3 years' experience of teaching post-graduate classes.
33. Rajasthan University	
Professor & Reader	(i) I or II class Master's degree. (ii) Either a research degree of doctorate standard or published work of high standard. (iii) About ten years' experience of teaching and some experience of guiding research.
Reader	(i) I or II class Master's degree. (ii) Research degree or published work of high standard.

- (iii) About 5 years' experience of teaching and some experience of guiding research.

Lecturer

I or II class Master's degree with 3 years' teaching experience.

34. Ranchi University

Professor

- (i) A first or second class Master's degree ordinarily in the subject concerned or in an allied subject of an Indian university or an equivalent qualification of a foreign university.
- (ii) Either a research degree of doctorate standard or published work of high standard or in case of English, if a person holding a doctor's degree is not available, a first or second class honours degree of Oxford or Cambridge, or the B.Litt. degree of Oxford or the M.Litt. degree of Cambridge.
- (iii) About 10 years' experience of postgraduate teaching in a university or college, adequate experience of guiding research and record of continuing research. Provided that the above conditions may be relaxed in the case of a candidate who in the opinion of the chancellor is otherwise distinguished and competent to be such a professor.

Reader

- (i) A second class Master's degree ordinarily in the subject concerned or in an allied subject of an Indian university or an equivalent qualification of a foreign university.
- (ii) Either a research degree of doctorate standard or published work of high standard or in the case of English a first or second class honours degree from Oxford or Cambridge or the B. Litt. degree of Oxford or the M.Litt. degree of Cambridge.
- (iii) About five years' experience of teaching in a degree college, some experience of guiding research and record of continuing research.

Lecturer

At least a second class Master's degree ordinarily in the subject concerned of an Indian university or an equivalent qualification of a foreign university or a research degree of doctorate standard,

35. S.V. Vidyapeeth

Professor

- (i) I or II class Master's degree.
- (ii) Either a research degree of doctorate standard or published work of high standard.
- (iii) About ten years' experience of teaching and some experience of guiding research.

Reader

- (i) I or II class Master's degree.
- (ii) Research degree or published work of high standard.
- (iii) About 5 years' experience of teaching and some experience of guiding research.

Lecturer

- (i) Bachelor's degree I and Master's degree II or Master's degree I and Bachelor's degree II with 3 years' experience or both degrees in second class with 5 years' experience or one degree in II class and the other in III with 7 years' experience of teaching graduate classes and/or research/professional experience.
- (ii) Bachelor's degree or Master's degree III and Ph.D. with 2 years' teaching experience in graduate classes and/or research/professional experience or
- (iii) Master's degree II with Ph.D. or
- (iv) A good honours degree or a Ph.D. degree of a foreign university of repute or a D.Sc. degree.

36. Saugar University

Professor

High academic attainments with extensive experience of research work, 10 years' experience of teaching postgraduate classes.

Reader

A doctorate degree or a first class Master's degree; extensive research experience; 7 years' experience of teaching postgraduate classes.

Lecturer

A Master's degree in first or second class with at least 2 years' experience of teaching postgraduate classes.

37. Shivaji University

Postgraduate teachers

- (i) I or II class Master's degree or Master's degree by research or

- (ii) I or II class Bachelor's degree with a Master's degree or
- (iii) Doctor's degree with at least a second class Bachelor's degree.

5 years' teaching experience to post-intermediate classes. A doctor's degree with a second class Master's degree or the Master's degree by research is also considered as sufficient qualification for appointment of postgraduate teachers.

38. S.N.D.T. Women's University

Professor

- (i) I or II class Master's degree.
- (ii) Either a research degree of doctorate standard or published work of high standard.
- (iii) About ten years' experience of teaching and some experience of guiding research.

Reader

- (i) I or II class Master's degree.
- (ii) Research degree or published work of high standard.
- (iii) About 5 years' experience of teaching and some experience of guiding research.

Lecturer

I or II class Master's degree.

39. Sri Venkateswara University

Professor/Reader

- (i) I or II class Master's degree.
- (ii) Research degree of doctorate standard or published work of high standard.
- (iii) 5 years' experience of teaching postgraduate classes.
- (iv) Experience of guiding research.

Lecturer

- (i) I or high II class Master's degree.
- (ii) A research degree in the subject and teaching experience of degree or postgraduate classes.

40. Vikram University

In schools of studies

Professor

Master's degree in first or second division together with research degree and specialisation in the subject or in one of the branches of the subject; experience of guiding the research work of students working for the Ph.D. degree.

Reader

Same as in the case of professor except that a person for the post of reader is required to have

seven years' experience of teaching postgraduate classes and five years' experience of guiding research for the Ph.D. degree.

Lecturer A first class Master's degree; preferably a research degree with at least 5 years' experience of teaching postgraduate classes.

41. Visva-Bharati

Professor

- (i) A research degree.
- (ii) M.A. high second class.
- (iii) Research publications of high standard.
- (iv) Experience of research guidance.
- (v) Experience of teaching postgraduate classes for 10 years.

Reader

- (i) M.A. high second class.
- (ii) Research publications.
- (iii) Experience of teaching postgraduate classes for 5 years.

Lecturer M.A. high second class.

QUALIFICATIONS FOR APPOINTMENT OF TEACHERS IN COLLEGES

1. Agra University

Teachers of Degree Classes

Arts I or II class M.A. or Ph. D. in the subject.

Science I or II class M.Sc. or M.A. or Ph.D. in the subject.

Heads of departments of degree classes.

M.A./M.Sc. I with 2 years' teaching experience of degree classes.

M.A./M.Sc. II or research degree with 3 years' teaching experience of degree classes.

Teachers of postgraduate classes.

I class Master's degree in the subject or

II class Master's degree in the subject with a research degree.

or

II class Master's degree or Ph.D. with 5 years' experience of teaching degree classes in the subject.

Heads of departments of postgraduate classes.

2 years' teaching experience of postgraduate classes for I class candidates,

or

3 years' teaching experience of postgraduate classes for II class candidates.

2. Andhra University

Lecturers and posts of higher grade

- | | |
|---------|--|
| Arts | <ul style="list-style-type: none"> (i) Doctorate degree. (ii) I or II class Honours B.A. or M.A. degree obtained after undergoing a course of instruction and public examination. |
| Science | <ul style="list-style-type: none"> (i) Doctorate degree. (ii) M.Sc. degree of Andhra University. (iii) (a) M.Sc. by thesis of Madras or its equivalent
(b) I or II M.Sc. degree of any other university where M.Sc. is given after a regular course of study. (iv) B.Sc. Hons. degree (I or II) of Andhra University or a degree of any other university considered as its equivalent. |

3. Bihar University

- | | |
|-----------|--|
| Professor | 8 years' teaching experience or a research degree with 5 years' teaching experience. |
| Lecturer | At least a second class Master's degree. |

4. Marathwada University

Arts

- | | |
|-----------|---|
| Professor | <ul style="list-style-type: none"> (i) D.Litt. or D.Sc. or (ii) Ph.D. with B.A. & M.A. in II class or (iii) Ph.D. with B.A. (Hons.) in I class or (iv) M.A. II with foreign qualifications or (v) M.A. I & B.A. II with 3 years' teaching experience or (vi) M.A. I & B.A. Pass with 5 years' teaching experience or (vii) B.A. in Pass class from a foreign university with 3 years' teaching experience or (viii) Ph.D. & B.A. II with 3 years' teaching experience or (ix) M.A. II & B.A. II with 5 years' teaching experience. |
| Lecturer | <ul style="list-style-type: none"> (i) M.A. II or (ii) B.A. (Hons.) I or B.A. Special or |

- (iii) M.A. Pass, B.A. II with 2 years' experience as tutor or
- (iv) B.A. (Hons.) of a foreign university.

5. Poona University

Professor

- (i) I class Master's degree or
- (ii) II class Bachelor's degree with Master's degree or II class Master's degree with 5 years' experience.
- (iii) Doctor's degree with II class Bachelor's degree or a Master's degree.

Reader

At least 3 years' experience as a lecturer.

Lecturer

- (i) M.A./M.Sc. II or
- (ii) M.Sc. and B.Sc. II or
- (iii) Doctorate degree or
- (iv) Master's degree with B.A. (Hons.) II.

6. Vikram University

Professor

- (i) First class Master's degree with at least 6 years' experience of teaching postgraduate classes or 8 years' experience of teaching degree classes or
- (ii) Second class Masters' degree with 8 years' experience of teaching postgraduate classes or 10 years' experience of teaching degree classes.

Asstt. Professor

- (i) First class Master's degree with 3 years' experience of teaching postgraduate classes or 4 years' experience of teaching degree classes, or
- (ii) Second class Master's degree with 4 years' experience of teaching postgraduate classes or 5 years' experience or teaching degree classes.

APPENDIX 16

SALARY SCALES OF TEACHERS

(Figures in Rs.)

1. Agra University

Professor	.. 1000-50-1500
Reader	.. 700-40-1100
Lecturer	.. 400-800

Postgraduate colleges

Degree Colleges

Principal	.. 800-50-1000—EB—50-1200	650-40-850—EB—50-900
Head of the department	.. 350-20-550—EB—25-650 EB—30-800	300-20-500—EB—25-600
Senior Teacher	.. 325-20-525-25-625	275-15-410—EB—20-550
Junior Teacher	.. 250-15-400—EB—20-500	225-15-360—EB—15-450

2. Aligarh Muslim University

Professor	.. 1000-1500
Reader	.. 700-1100
Lecturer	.. 400-800

3. Allahabad University

Professor	.. 1000-50-1500
Reader	.. 700-40-1100
Lecturer	.. 400-30-640-40-800

4. Andhra University*

Professor	.. 1000-50-1500
Reader	.. 700-40-1100
Lecturer	.. 400-30-640-40-800

5. Annamalai University

Professor	.. 800-50-1250
Reader	.. 500-25-800
Lecturer	.. 250-20-490-10-500
Tutor/Demonstrator	.. 150/- consolidated and 220/- for Agriculture demonstrator.

6. Banaras Hindu University

Professor	.. 1000-50-1500
Reader	.. 700-40-1100
Lecturer	.. 400-30-640-40-800

7. Bhagalpur University

Professor	.. 850-50-1250 plus C.A.
Reader	.. 350-25-650-35-1000 plus C.A.
Lecturer	.. 200-220-25-320-25-670-20-750

* These scales of pay have been adopted on a restricted basis.

Colleges

Principal	.. 500-35-800 plus C.A.
Lecturer	.. 200-20-220-15-340-20-500 plus C.A.

8. Bihar University*Colleges*

Principal	.. 500-35-800 and rent free quarters or 10% of the salary in lieu thereof.
Professor	.. 300-25-500—EB—25-750
Lecturer	.. 200-20-220-15-340—EB—20-500

9. Bombay University

Senior Professor	.. 1600-100-1800
Professor	.. 1000-50-1500
Reader	.. 700-40-1100
Lecturer	.. 400-30-640—EB—40-800
Demonstrators who have been redesignated as Associate Lecturers in the University Department of Chemical Technology	.. 300-25-500-30-560

Colleges

Principal	.. 600-25-800
Professor	.. 350-20-450-25-650
Lecturer	.. 250-15-400-20-500
Demonstrator/Tutor	.. 200-5-250-10-300
P.T. Director	.. 200-5-250-10-300

Full-time temporary teachers

Professor	.. 350 p.m.
Lecturer	.. 250 p.m.
Demonstrator/Tutor	.. 200 p.m.

Part-time teachers

Professor in Arts, Science-College	.. 250/- (inclusive of allowances)
Professor in Professional College	.. 250-15-400
Lecturer	.. 120-10-250
Demonstrator/Tutor	.. 125/- (inclusive of allowances)

10. Burdwan University

Professor	.. 1000-1500
Reader	.. 700-1100
Lecturer	.. 400-800

11. Calcutta University

Professor	.. 1000-1500
Reader	.. 700-1100
Lecturer	.. 400-800

Colleges

Principal	.. 600-800
Head of Department	.. 400-700
Senior Lecturer	.. 300-600
Lecturer	.. 200-500

12. Delhi University

Professor	.. 1000-1500
Reader	.. 700-1100
Lecturer	.. 400-800
Asstt. Lecturer	.. 300-25-350
Research Assistant	.. 250/-

13. Gauhati University

Professor	.. 1000-50-1500
Reader	.. 700-40-1100
Lecturer	.. 400-30-640—EB—40-800 with house rent allowance of Rs. 50/- p.m. in all cases.

14. Gorakhpur University

Professor	.. 1000-1500
Reader	.. 700-1100
Lecturer	.. 400-800

14. Gurukul Kangri Vishvavidyalaya

Head of Department	.. 350-20-550—EB—25-650—EB—30-800
Lecturer	.. 250-15-400—EB—20-500

16. Gujarat University

Professor	.. 800-50-1250
Reader	.. 500-25-800
Lecturer	.. 250-25-500
Demonstrator/Tutor	.. 200-10-300

Colleges

Professor	.. 350-15-500-20-700
Assistant Professor	.. any grade between 350-15-500-20-700 and 250-10-400-15-475
Lecturer	.. 250-10-400-475
Demonstrator/	.. 180-10-300 (holding Master's degree)
Tutor	.. 130-10-250 (holding Bachelor's degree)

17. Jabalpur University

Professor	.. 1000-50-1500
Reader	.. 700-40-1100
Lecturer	.. 400-30-640—EB—40-800

*Colleges**As recommended by the U.G.C.**As prescribed by the
University under College Code*

Principal	600-40-800	Principal	500-35-850
Professor	400-25-700	Professor	350-25-500—EB—25-750
Senior lecturer	300-25-600	Asstt. Professor	300-25-500—EB—25-600
Lecturer	200-15-320-20-500	Lecturer	200-20-220-15-340—EB—20-500

18. Jadavpur University

Professor	.. 1000-50-1500
Reader	.. 700-40-1100
Lecturer	.. 400-800

19. **Jammu & Kashmir University**

Professor	.. 1000-50-1500
Reader	.. 600-50-1000
Lecturer	.. 350-30-500—EB—40-700

20. **Jodhpur University**

Professor	.. 1000-1500
Reader	.. 700-1100
Lecturer	.. 400-800

21. **Kalyani University**

Professor	.. 1000-1500
Reader	.. 700-1100
Lecturer	.. 400-800

22. **Karnatak University**

Professor	.. 1000-1500
Reader	.. 700-1100
Lecturer	.. 400-800

Affiliated Colleges

Principal	.. 600-40-1000
Professor	.. 400-25-700
Senior lecturer	.. 300-25-600
Lecturer	.. 200-15-320-20-500

Constituent Colleges

Principal	.. 600-40-1000 (Selection grade of Professor plus Rs., 100/- Principal's allowance)
Professor	.. 400-30-700-40-900 (class II)
Senior lecturer	.. 300-25-600
Lecturer	.. 230-20-350-25-500
Demonstrator	.. 150-8-190-10-300

23. **Kerala University**

Professor	.. 1000-1500
Reader	.. 700-1100
Lecturer	.. 400-800

Government Colleges

Principal	.. 500-800 plus allowance of 100/- (colleges with degree courses) 475-700 plus allowance of 100/- (Principals of other colleges)
Professor	500-800 (First grade Professors) 475-700 (Second grade Professors)
Lecturer	.. 250-500

Private College.

Principal (colleges with degree course)	..	600-700
Principal (of other colleges)	..	300-600
Professor (1st grade)	..	400-700
Professor (2nd grade)	..	300-25-600
Lecturer	..	200-400

24. Kuruksetra University

Professor	..	1000-1500
Reader	..	700-1100
Lecturer	..	400-800

25. Lucknow University

Professor	..	1000-1500
Reader	..	700-1100
Lecturer	..	400-800

26. Madras University

Professor	..	1000-1500
Reader	..	700-1100
Lecturer	..	400-800

Colleges

Principal	..	600-30-900
Head of the Postgraduate Department	..	450-25-800
Head of the Undergraduate Department	..	350-25-650
Assistant Lecturer	..	225-10-275-15-425

27. Magadh University

Professor	..	850-50-1250
Reader	..	350-25-650—EB—35-1000
Lecturer	..	200-20-220-320—EB—25-670—EB—20-750

28. Marathwada University

Professor	..	1000-50-1500
Reader	..	700-40-1100
Lecturer	..	400-30-640—EB—40-800

29. M.S. University of Baroda

Professor	..	800-50-1250
Reader	..	500-25-800
Lecturer	..	250-20-490-10-500
Demonstrator/Tutor	..	150-10-250

30. Mysore University

Professor	..	1000-1500
Reader	..	700-1100
Lecturer	..	400-800

Colleges

Professor	..	600-40-1000 (Class I)
Professor	..	400-30-700-40-900 (class II)
Reader	..	300-20-400-25-600
Lecturer	..	230-20-350-25-500

31. Nagpur University

Professor	..	1000-1500
Reader	..	700-1100
Lecturer	..	400-800

Colleges

Principal	..	600-40-800
Professor	..	400-25-700
Asstt. Professor	..	300-25-450—EB—25-600
Lecturer	..	200-15-320—EB—20-500

32. North Bengal University

Professor	..	1000-50-1500
Reader	..	700-40-1100
Senior lecturer	..	400-30-640—EB—40-800
Junior lecturer	..	300-15-350—EB—20-650
Tutor	..	250-10-400

Colleges

Principal	..	500-25-750
Senior lecturer	..	250-10-450
Junior lecturer	..	150-10-350
Tutor	..	100-5-150

33. Osmania University

Professor	..	1000-1500
Reader	..	700-1100
Lecturer	..	400-800

34. Panjab University

Professor & Principal Law College	..	1000-50-1500
Reader & Principal Evening college Chandigarh	..	700-40-980—EB—40-1100
University Principal (Evening college, Simla, Jullundur and Rohtak)	..	600-40-800 (Rs. 100/- Residence allowance)
Lecturer	..	400-30-640—EB—40-800
Instructor	..	350-20-450-25-600
Teaching Assistant	..	300/- fixed

Colleges

Principal	..	600-40-800
Lecturer	..	200-15-320-20-500

35. Poona University

Professor	..	1000-50-1500
Reader	..	700-40-1100
Lecturer	..	400-30-640—EB—40-800
Demonstrator	..	250-20-350 (on tenure basis)

Constituent Colleges

Professor	..	300-20-400-25-600
Asstt. Professor	..	250-15-430-20-450
Lecturer	..	200-15-380-20-400
Tutor/Demonstrator	..	150-10-200—EB—10-250 (with Master's degree) 100-5-150—EB—10-200 (with Bachelor's degree)

1. The Principal is given a special allowance of Rs. 100/- in addition to his pay in the grade of the Professor.
2. Each teacher of the above category is given D.A. at Government rates.
3. Each teacher of the above classes is given C.C.A. and H.R.A.

36. Punjabi University

Professor	..	1000-50-1500
Reader	..	700-40-1100
Lecturer	..	400-30-640—EB—40-800

37 Rabindra Bharati

Professor	..	1000-50-1500
Reader	..	700-40-1100
Lecturer	..	400-30-640—EB—40-800
Asstt. Lecturer	..	300-15-330-20-650
Teacher	..	135-7-245-8-325

38. Rajasthan University

Professor	..	1000-1500
Reader	..	700-1100
Lecturer	..	400-800

Colleges

Principal	..	800-50-1200 (Postgraduate College) 600-40-800 (Degree College)
Head of the department	..	500-25-700—EB—30-850 (Postgraduate College) 400-25-700 (Degree College)
Lecturer	..	250-15-400-25-600
P.T. Instructor (at least graduate and Dip. P.T.)	..	200-10-280—EB—15-400-25-450
Librarian	..	250-15-400-25-600

No full time member of the teaching staff, including a demonstrator in an affiliated college is given a salary of less than 200/- p.m.

39. Ranchi University

Professor	..	850-50-1250 plus C.L.A. 17½%
Reader	..	350-20-650-25-1000 plus 17½%
Lecturer	..	200-20-220-650-750 —do—
Lecturers in affiliated Colleges	..	200-20-220-15-340-EB-20-500 plus 20% D.A.

40. S.V. Vidyapeeth

Professor	..	800-50-1250
Reader	..	500-25-800
Lecturer	..	250-20-500

M.B. Patel College of Education (Maintained and run by the University)

Principal	..	800-50-1250
Professor	..	400-25-700
Lecturer	..	250-15-400-20-500
Tutor	..	150-10-300

*Colleges**

Principal	..	600-40-800
Professor/Head of the Department	..	400-25-700
Senior Lecturer	..	300-25-600
Lecturer	..	200-15-320-500

41. **Saugar University**

Professor	..	1000-50-1500
Reader	..	700-40-1100
Asstt. Professor	..	400-30-640—EB—40-800
Instructor	..	200-15-290 + D.A.

42. **Shivaji University**

Professor	..	1000-50-1500
Reader	..	700-40-1100
Lecturer	..	400-30-640—EB—40-800
Demonstrator	..	250-20-350 (on tenure basis)

43. **S.N.D.T. Women's University**

Professor	..	1000-50-1500
Reader	..	700-40-1100
Lecturer	..	400-30-640—EB—40-800
Junior lecturer	..	300-25-350
Asstt. Lecturer	..	220-10-260-15-320
Demonstrator	..	200-10-250

44. **Utkal University**

Professor	..	800-50-1250
Reader	..	500-25-800
Lecturer	..	250-20-500

45. **Varanaseya Sanskrit Visvavidyalaya**

Professor	..	1000-1500
Reader	..	700-1100
Asstt. Professor	..	400-800

46. **Sri Venkateswara University**

Professor	..	1000-50-1500
Reader	..	700-40-1100
Lecturer	.. (i)	400-30-640—EB—40-800
	(ii)	300-25-600
Instructor	..	300-15-15-20-350
Tutor/Demonstrator	..	200-10-250

Colleges

Principal	..	400-30-700
Professor	..	250-15-400-25-500
Lecturers including degree holders in Language departments	..	150-150-10-300
Lecturers in language departments (Oriental title holders)		100-5-150-10-200

* The Constituent Colleges have adopted U.G.C. scales of pay.

47. Vikram University

Professor	.. 1000-1500
Reader	.. 700-1100
Lecturer	.. 400-800

48. Visva-Bharati

Professor	.. 1000-50-1500
Reader	.. 700-40-1100
Lecturer	.. 400-30-640-40-800
Asstt. Lecturer	.. 275-15-350-20-650
Instructor	.. 175-10-265-15-425

APPENDIX 17

METHODS OF TEACHING (OTHER THAN LECTURING)

1. Agra University

K.M. Institute of Hindi Studies & Linguistics, Agra

Tutorials, seminars, exercises in field work, practicals in laboratories, symposia.

Institute of Social Sciences, Agra

Seminars, tutorials and practicals. (Tutorials and seminars provide opportunity for writing work and for closer contact between students and teachers.

2. Allahabad University

Tutorials and seminars.

3. Andhra University

University College: Laboratory work (Science), tutorials, seminars and exercises in field work (Social Sciences).

4. Annamalai University

Tutorials, seminars, visual education etc.

5. Banaras Hindu University

Practicals, tutorials and sessionals in various courses of study. Credit is given for sessional work.

6. Bhagalpur University

Tutorials, seminars, excursions in some subjects, and extension lectures by eminent scholars.

7. Bihar University

Excursions in some subjects.

8. Bombay University

Tutorials and seminars in the Faculties of Arts, Commerce and Law. Seminars are intended to develop independent thinking among students; logical presentation of views and ability to participate intelligently in discussions. Tutorials are held to discuss the difficulties of the students and to help their progress of study. These are in an experimental stage. Tutorials, seminars, maintenance of journals and practicals in the Faculty of Science.

9. Calcutta University

Tutorials are held for Humanities and practical classes for Science subjects.

10. Delhi University

Tutorials and seminars. In Science departments other methods like audio-visual aids etc., are also used.

11. Gauhati University

Commerce: Students are taken on excursions and shown the practical working of factories, business and industrial concerns. Every now and then film shows are also arranged. Seminars are arranged for postgraduate students.

12. Gorakhpur University

Tutorials, seminars and laboratory work.

13. Gujarat University

Over and above the method of demonstration in Science subjects and some field work in subjects like engineering, agriculture and labour welfare, case methods in subjects like medicine and surgery, colleges affiliated to this university employ the method of tutorials and occasionally of seminars for instruction of students in the pre-university/three-year degree course in the Faculties of Arts, Science and Commerce. Seminars have been introduced in a limited manner at the postgraduate level. The number of seminars arranged for each subject during the whole academic year is six.

14. Gurukul Kangri Vishvavidyalaya

Tutorials, debates, educational tours etc.

15. Jabalpur University

Lecture method for general teaching is supplemented by tutorials for undergraduate students. Seminars have been introduced for postgraduate students wherever possible.

16. Jadavpur University

Tutorials and seminars.

Tutorials: Tutorials are held for both undergraduate and postgraduate courses in all the faculties. Records of tutorials are maintained and are taken into consideration by the examination committee when interviewing examinees for *viva voce* with a view to determining the final award of classes in the B.A. (Hons.) and the M.A. examinations. Written exercises on selected topics related to the curriculum are also set. The tutor assigns the essays and suggests corrections and discusses the subject sometimes covering a wider ground than the subject of the essay. It is attempted, as

far as possible, to assist each student individually and to improve his comprehension of the subject and to stimulate original thinking.

On account of inadequacy in the strength of the teaching staff it is not possible to provide for tutorial work in the subsidiary subjects or for the pre-university students.

Regarding engineering students, problems of a practical nature are given to be worked out at home and to be submitted for correction and then these are discussed in the tutorial classes.

For Science students, tutorial classes are not held in all the departments, though they are held in most of the subjects.

Seminars :

Seminars are held only for postgraduate students. They are not held as frequently as tutorials. There are two types of seminars :

(a) those in which papers on given subjects are read by students followed by discussion among the students and teachers.

(b) those in which eminent scholars in the field give talks or read papers on selected subjects followed by discussion mainly with students.

17. Jammu & Kashmir University

Seminars, tutorials, tours, field work and extension lectures.

18. Jodhpur University

Tutorials are held subject to accommodation being available to hold such classes. Seminars are also held. The system of sessional work is in vogue.

19. Kalyani University

Groups are organised for tutorials and seminar work. Periodical tests are also held.

20. Karnatak University

Tutorials and seminars. Listening periods are arranged at the pre-university level with a view to improving the spoken language of the students. The tutorial system brings the teachers in close contact with their students and thus helps to establish personal contact. This personal contact exercises a healthy influence in maintaining the discipline of the students in addition to helping them to make good their academic deficiencies.

21. Kuruksetra University

Tutorials and seminars; demonstration in Science subjects.

22. Madras University

Seminars and symposia whenever found suitable.

23. Magadh University

Tutorials, debates, discussions, seminars and essay competitions are arranged from time to time.

24. Marathwada University

Tutorials and seminars in Marathi, politics, economics, history; tutorials in zoology; seminars, tutorials and practicals in botany.

25. M.S. University of Baroda

Arts: Lectures are supplemented by home assignments to students whenever possible. Periodical tests are held and the credits earned are counted towards the final result. Where the groups are small particularly at the higher stages, tutorials are also held. Seminars are organised at the postgraduate level.

Science: Seminars, assignments, field work. (Seminars and assignments are for postgraduate students).

Commerce: Seminars, particularly at the postgraduate stage. Tutorials in small groups are taken wherever necessary and reading and writing assignments are given wherever the number of students permits it.

26. Mysore University

Demonstration in respect of Science subjects wherever possible. Postgraduate departments in Humanities have 2 hours of seminar work every week.

27. Nagpur University

Apart from lectures, a number of colleges arrange tutorials for certain subjects. Generally 10 to 15 students are attached to a teacher for each tutorial. Seminars are organised for postgraduate students. In addition to this, there are terminal examinations to judge the standard of students. Excursions, tours, film shows, extension work etc., are also organised.

28. North Bengal University

Seminars, tutorials, and field study; considerable emphasis is laid on tutorial work.

29. Osmania University

Seminars—for postgraduate students.

Tutorials—for undergraduate students. Students are taken on excursions, study tours organised to educate them in their special fields.

30. Panjab University

Both lectures and seminars are employed for postgraduate students in the university. In some departments and in some colleges, effort is made to provide tutorials also.

31 Patna University

Tutorials.

32. Poona University

Tutorials, seminars, visual aids and educational/instructional tours.

Tutorials: Tutorials are arranged for all subjects in batches of ten. Each student has to write an exercise on a theme, set by the university teachers and to submit it to the tutor. The tutor then examines the exercises and gives marks. Each student has to attend a prescribed number of tutorials. The student must get at least 40 per cent marks in the aggregate in all the tutorials taken together. This performance of a candidate is taken into consideration while granting terms to enable the student to appear for the university examinations.

33. Punjabi University

Tutorials are held at the postgraduate level.

34. Rabindra Bharati

Practical classes in Fine Arts and tutorials for Humanities.

35. Rajasthan University

Group discussions, seminars and tutorials.

36. Ranchi University

Tutorials at the undergraduate level.

Tutorials and seminars at the postgraduate level.

37. Roorkee University

Tutorials, practicals, seminars and study tours.

38. S.V. Vidyapeeth

Tutorials for undergraduate students.

Seminars for postgraduate students.

39. Saugar University

Tutorials and seminars. Normally one tutorial or seminar is provided for each group of 10 to 12 students per week.

40. S.N.D.T. Women's University

Tutorials, seminars, symposia, group discussion etc.

41. Sri Venkateswara University

Meetings are organised by departmental societies in their respective subjects. Papers are presented by the students, both at the undergraduate and postgraduate levels. About 12 meetings are held in most of the departments every year.

42. Vikram University

Tutorials.

43. Visva-Bharati

Tutorials and seminars. Extension lectures by eminent scholars and visiting professors are also arranged. The number of tutorials is at least half the number of lectures. At least one seminar is held every term.

APPENDIX 18
WORKLOAD OF TEACHERS (HOURS PER WEEK)

University	Professor	Reader	Lecturer
I	2	3	4
1. Agra University (Institute of Social Sciences, Agra)	6L	7L + 2T + 2S + 2 (Monograph)	8L + 2T + 2S + 6 (Monograph)
2. Andhra University	6 (In the university colleges)	9	12
3. Annamalai University	10L + 2(T + S) + 10 research + 4 administration	12L + 4(T + S)	12L + 4(T + S)
4. Banaras Hindu University	6 periods	14 periods (periods of 45—50 minutes)	21 periods in Science and 18 in Arts.
5. Bhagalpur University	Teachers for postgraduate and honours classes — 18 periods		Teachers for undergraduate pass course—21 periods.
6. Bihar University	Teachers for postgraduate and honours classes—18 periods		Teacher for Bachelor (Pass) classes — 21 periods.
7. Bombay University	<i>Constituent Colleges</i> Postgraduate teacher guiding Ph.D. Students—10 L + 3T Postgraduate teacher having more than five postgraduate students registered under him—13 periods L + 3 Tutorials Other teachers—15 periods L + 4 Tutorials No fixed number of hours are prescribed by the Syndicate for teachers in the university departments. A programme of instruction is prepared by the Director/Head of the department. University teachers, as a part of their duties have to devote substantial time for guiding research students and doing their own research.		

1	2	3	4
8. Calcutta University	College teachers—18 hours or 24 periods of 45 minutes duration.		
9. Delhi University	Not more than 15 hours for university/college teachers.		
10. Gauhati University	Science 6L Arts 8L	6L+9 (practicals) 12L	6L+12 (practicals) 15L
11. Gorakhpur University	Science 3L+6 (practicals) Arts 9L	— 9L+3T	5L+3T+12 (practicals) 12L+6T
12. Gujarat University	Teachers recognised as guides for Ph.D. Teachers recognised for postgraduate classes Other teachers	—14 Periods —18 Periods —21 Periods	— — Period of 45 minutes duration. —
13. Gurukul Kangri Visva- vidyalaya	Teachers—18 hours		
14. Jabalpur University	12 (L+T)	15 (L+T)	20 (L+T)
15. Jadavpur University	8	12	15
16. Jammu and Kashmir University	Head of the department doing postgraduate work Teachers doing postgraduate work Other teachers	— 18 periods — 21 periods — 24 periods	
17. Jodhpur University	10 periods	14 periods	20 periods
18. Karnatak University	Teachers in the university department — 6L+2T+2S Teachers in colleges—minimum 12 hours and maximum 15 hours.		
19. Kerala University	8 to 10	Science 18 to 20 (including 8-10 lab. work) graduate 15 (including not more than 6 lectures)—post-graduate Others—maximum 16 hours.	

1	2	3	4
20. Madras University	Teacher teaching undergraduate classes Teacher teaching undergraduate classes and having practical classes also Postgraduate teacher in Humanities Teacher teaching postgraduate classes and having practical classes. Teacher teaching undergraduate and post-graduate classes.	—16 hours — 22 hours (including practicals where teaching work does not exceed 10 hrs.) —10 hours. — 22 hrs (including practicals. Lecturing work does not exceed 8 hrs.) — 8 hrs of postgraduate + 4 hours of undergraduate.	
21. Magadh University	<i>Note.</i> —Teachers in the colleges are expected to be in the college during college hours i.e. 10 A.M. to 4 P.M.		
22. Marathwada University	Teacher—workload varies between 14 to 17 periods from department to department.		
23. M.S. University of Baroda	Teacher guiding Ph.D. research—at least 4 periods of teaching to postgraduate classes. Teacher not guiding Ph.D. research—at least 6 periods of teaching to postgraduate classes.		
	Arts 6 periods Science 6 to 8 Periods L+4 S	8 periods 8 to 10 Periods L+2 Periods 8+4 to 6 Periods (Practicals)	16 periods 10 to 12 Periods L+6 to 8 periods (Practicals)
	(Each period of 45 minutes duration)		
24. Mysore University	<i>College having postgraduate and honours classes.</i>		
	With practicals 12 hrs.	16 hrs.	18 hrs.
	Without practicals 10 hrs.	12 hrs.	14 hrs.
	(assistant professor)		
25. Nagpur University	For teachers who are not engaged in research work — 20 periods per week For teachers who are engaged in research work — 16 periods per week provided that in case of postgraduate classes, two hours of teaching shall count as three hours for the purpose of this calculation (Each period shall be of forty-five minutes.		

1	2	3	4
26. North Bengal University	Teacher	8 to 10 periods (lecture work) + 3 to 4 periods (tutorials)	
27. Panjab University	Generally 12 hours of lectures/seminars, but teachers are required to remain in the university department throughout the day.		
28. Punjabi University	Arts 4 to 6 hrs. Science 9 hrs.	8 to 10 hrs. 10 to 12 hrs.	8 to 10 hrs. 15 hrs.
29. Patna University	At postgraduate level At honours level At pass level	-- 15 periods -- 18 periods -- 21 periods.	
Poona	19 periods including tutorials and practicals (Number of lectures does not exceed 15).		
30. Rabindra Bharati	8 hrs. (maximum)	—	18 hrs. (maximum)
31. Rajasthan University	Postgraduate classes 9 periods Degree classes 9 periods	12 periods 15 periods	14/16 periods 21 periods
32. Ranchi University	15/16 periods	15/16 periods	21 periods (undergraduate courses) 18 periods (postgraduate & honours' courses)
33. Roorkie University	6 hrs.	14 hrs.	18 hrs.
34. S.V. Vidyapeeth	<i>For undergraduate classes</i> Recognised postgraduate teacher guiding Ph.D. students Recognised postgraduate teacher Other teachers		
35. Saugar University	12 periods	18 periods	— 10 periods L + 3 T — 13 periods L + 3 T — 15 periods L + 4 T 24 periods

1	2	3	4
36. S.N.D.T. Women's University	8 to 10 periods including administrative work	12 to 14 periods	15 to 18 periods
37. Sri Venkateswara University	8 lectures Administrative work of 8 hrs. in Science and 4 hrs. in Arts.	8 lectures + 4 lab. work	8 lectures + 6 lab. work
38. Vikram University	Head of postgraduate classes Lecturers of postgraduate classes Lecturers of degree classes	18 periods 21 periods 24 periods	(Each period is of 45 minutes duration).
39. Visva-Bharati	8 to 10 (including tutorials)	12 to 14 (including tutorials)	16 to 18 (including tutorials).
Notations :		L =	Lecture work
		T =	Tutorial work
		S =	Seminar work

APPENDIX 19

COMPOSITION OF SELECTION COMMITTEES FOR APPOINTMENT TO VARIOUS CATEGORIES OF TEACHING POSTS IN UNIVERSITIES AND INSTITUTIONS DEEMED TO BE UNIVERSITIES.

Part A

UNIVERSITIES

1. Agra University (Institute of Social Sciences and K.M. Institute of Hindi Studies and Linguistics)

- (1) Vice-Chancellor,
- (2) Director of the Institute,
- (3) Dean of the Faculty of Arts,
- (4) Two experts nominated by the Chancellor.

1. Aligarh Muslim University

- (1) Vice-Chancellor,
- (2) Pro-Vice-Chancellor,
- (3) A nominee of the Visitor,
- (4) The Dean of the Faculty concerned,
- (5) Head of the Department concerned and the following :
 - (a) for professor—Three persons not connected with the university nominated by the Academic Council;
 - (b) for lecturer/reader—Two persons not connected with the university nominated by the Academic Council.

(In case of teachers appointed in Women's College, the principal of the college is an ex-officio member of the selection committee).

2. Allahabad University

- (1) Vice-Chancellor (2) Dean of the Faculty (3) Head of the department (4) Two members who are not in service of the University elected by the Executive Council (5) Three experts in the case of the appointment of a professor and two in other cases.

3. Andhra University

- (1) Vice-Chancellor, (2) Director of Public Instruction or his nominee, (3) Chairman of the Honours Board of Studies; (4) Two persons nominated by the Syndicate, (5) Principal of the College.

4. Annamalai University

- (1) A nominee of the Chancellor; (2) The Founder (3) Vice-Chancellor; (4) One member elected by the Syndicate from among its members (5) One member elected by the Senate from among its members.

5. Banaras Hindu University

(1) Vice-Chancellor; (2) Pro-Vice-Chancellor; (3) persons as specified below.

(a) for professor—Three persons not connected with the university nominated by the Executive Council who have special knowledge of or interest in the subject;

(b) for reader/lecturer—(1) The Dean of the Faculty

(2) Head of the Department concerned and (3) Two persons not connected with the university nominated by the Executive Council who have special knowledge of or interest in the subject.

6. Bhagalpur University

Selection is made by the State Public Service Commission with the assistance of two experts, one nominated by the Syndicate and the other nominated by the Academic Council.

7. Bihar University

The selection is made by the Bihar Public Service Commission.

8. Bombay University

(1) Vice-Chancellor—ex-officio Chairman (2) Rector (if any)
(3) One expert from the faculty appointed by the Academic Council
(4) four experts, who shall not be fellows, members of faculties, teachers of the university; two appointed by the Academic Council and two by the Syndicate.

9. Calcutta University

(1) Vice-Chancellor; (2) Dean of the Faculty and (3) other persons as follows:

(a) for professor (i) One expert nominated by the Chancellor
(ii) Two experts nominated by the Syndicate

(b) For reader/lecturer—(i) Head of the Department concerned
(ii) One expert nominated by the Chancellor (iii) One expert nominated by the Syndicate.

10. Delhi University

(1) Vice-Chancellor, (2) Pro-Vice-Chancellor, (3) A nominee of the Visitor, (4) The Dean of the Faculty concerned (5) Head of the Department concerned and the following:

(a) for professor—Three persons not connected with the university nominated by the Academic Council;

(b) for lecturer/reader—Two persons not connected with the university nominated by the Academic Council.

(In case of teachers appointed in Women's College, the principal of the college is an ex-officio member of the selection committee.

11. Gauhati University

(1) Vice-Chancellor, (2) Dean of the Faculty, (3) A person elected by the Academic Council not connected with the university (4) One person nominated by the Chancellor (5) One person appointed by the Executive Council and other members as follows :

- (a) for professor/reader—An expert not connected with the university appointed by the Executive Council.
- (b) for lecturer—Head of the Department.

12. Gorakhpur University

(1) Vice-Chancellor (2) Dean of the Faculty; (3) Head of the Department; (4) Two members elected by the Executive Council, (5) Other members as follows :

- (a) for professor—Three experts nominated by the Chancellor,
- (b) for lecturer—Two experts nominated by the Chancellor.

13. Gujarat University

For professors and readers the committee comprises the following :

(1) Vice-Chancellor; (2) Rector; (3) Two persons appointed by the Academic Council—one of whom is an outsider and the other a university professor, and (4) Three persons appointed by the Syndicate.

For lecturers: The committee comprises all members of the Syndicate and such experts as are nominated by the Vice-Chancellor.

14. Jabalpur University

(1) Vice-Chancellor, (2) Rector, if any; (3) Dean of the Faculty; (4) The Head of the Department concerned (5) A nominee of the Chancellor; (6) Three members to be appointed by the Academic Council.

(From 24th September, 1964, appointments to the posts of professors and readers and such other teachers as may be specified by the Chancellor from time to time are made on the recommendations of the Public Service Commission).

15. Jadavpur University

(1) Vice-Chancellor; (2) Two members of the University Executive Body; (3) One nominee of the Chancellor; (4) Dean of the Faculty; (5) Principal of the University College (6) Head of the Department concerned; (7) Two experts and (8) Registrar.

16. Jammu & Kashmir University

(1) Vice-Chancellor; (2) Chairman of the Public Service Commission or his nominee; (3) Two persons not connected with the university—one nominated by the Syndicate and the other by the Vice-Chancellor; (4) One person nominated by the Syndicate.

17. Jodhpur University

(1) Vice-Chancellor; (2) An educationist nominated by the Chancellor; (3) Dean of the Faculty; (4) Head of the Department; (5) Two experts not connected with the university nominated by the Vice-Chancellor.

18. Kalyani University

(1) Vice-Chancellor and (2) Two experts.

19. Karnatak University

(1) Vice-Chancellor; (2) Head of the Department; (3) One member elected by the Syndicate; (4) One member elected by the Academic Council; (5) One member nominated by the Chancellor.

20. Kerala University

(1) Vice-Chancellor; (2) Dean of the Faculty; (3) One member of the Syndicate nominated by the Vice-Chancellor; (4) Two experts nominated by the Syndicate provided that in the case of teacher other than professor, one of the experts nominated by the Syndicate is the university professor.

21. Kuruksetra University

(1) Vice-Chancellor; (2) Dean of the Faculty; (3) Head of the Department; (5) 3 experts in case of professor and 2 in case of reader/lecturer nominated by the Vice-Chancellor from a panel of names drawn up by the Academic Council. Registrar is secretary of all the selection committees.

22. Madras University

(1) Vice-Chancellor; (2) Chairman of the Board of Studies; (3) 4 persons who are experts in the subject nominated by the Syndicate; in the case of readers and lecturers one of the experts is the university professor in the subject.

23. Magadh University

24. Selection is made by the State Public Service Commission with the assistance of two experts, one nominated by the Academic Council and the other by the Syndicate.

24. M.S. University of Baroda

The Selection Committee consists of

(1) Vice-Chancellor; (2) Pro-Vice-Chancellor (3) Dean of the Faculty; (4) Head of the Department and other members as follows:—
 for professor/reader —4 experts from outside
 for lecturer —3 members of the Syndicate

25. Mysore University

Vice-Chancellor; (2) Head of the Department; (3) Two experts from outside the university.

26. Marathwada University

See 47 (2) (iii) of the Act.

27. Nagpur University

(1) Vice-Chancellor; (2) Head of the Department of Study in the Faculty concerned; (3) Two experts appointed by the Academic Council; (4) One member appointed by the Executive Council and (5) One member appointed by the Chancellor.

28. North Bengal University

(1) Vice-Chancellor; (2) One or two experts; (3) One or two members of the university.

29. Osmania University

(1) Vice-Chancellor; (2) Director of Public Instruction; (3) Dean of the Faculty; (4) Chairman of the Board of Studies; (4) Head of the Department and (5) Two persons nominated by the Syndicate (not being members of the body).

30. Panjab University

professor/reader

—The Committee consists of five persons of whom two are experts from outside the State.

lecturer

—5 members of whom at least two are experts in the subject.

31. Patna University

The selection is made by the Bihar Public Service Commission.

32. Poona University

(1) Vice-Chancellor; (2) One expert selected by the Academic Council who is a member of the Faculty; (3) One expert selected by the Academic Council who is not a member of the Faculty; (4) two members selected by the Executive Council who are not connected with the university.

33. Punjabi University

(1) Vice-Chancellor; (2) Dean of the Faculty; (3) One member appointed by the Syndicate from among its own members; (4) other members are as follows:

(a) for professor—Three external experts appointed by the Academic Council.

- (b) for reader/lecturer—(i) Two external experts appointed by the Academic Council (ii) Head of the Department concerned if he is a professor.

34. Rajasthan University

(1) Vice-Chancellor; (2) Dean of the Faculty (3) One member of the Syndicate elected by the Syndicate; (4) Two experts appointed by the Chancellor on the recommendation of the Syndicate. (5) Head of the Department not below the rank of professor.

35. Rabindra Bharati

(1) Vice-Chancellor; (2) Dean of the Faculty; (3) Head of the Department; (4) Two members selected by the Executive Council (for professor and reader) (5) One member selected by the Executive Council (for lecturer).

36. Ranchi University

Selection is made by the State Public Service Commission (for appointment in the University Service).

37. S.V. Vidyapeeth

(1) Vice-Chancellor; (2) Dean of the Faculty; (3) Head of the Department; (4) Four experts to be nominated by the Syndicate provided that two of them shall not be fellows or members of any Faculty or teachers of the university (for professor and reader).

38. Saugar University

(1) Vice-Chancellor; (2) Head of the Department, if he is a professor; if however the Head of the Department is a reader he shall be a member of the Selection Committee concerned to select an assistant professor; (3) Two experts nominated by the Academic Council; (4) One person nominated by the Executive Council from amongst its own members; (5) One or more members not being administrative officers of the university, appointed by the Vice-Chancellor; (6) One expert nominated by the Vice-Chancellor if and when he thinks it necessary.

39. Sri Venkateswara University

(1) Vice-Chancellor; (2) Principal (3) Head of the Department (4) Two experts from other universities.

40. Shivaji University

(1) Vice-Chancellor; (2) Head of the University Department concerned; (3) One expert, selected by the Syndicate, not connected with the University; (4) Two experts elected by the Academic Council one of whom shall be a member of the Faculty and the other not connected with the university; (5) One expert nominated by the Chancellor, not connected with the university.

41. S.N.D.T. Women's University

(1) The Vice-Chancellor—ex-officio-Chairman; (2) The Director of Education, Bombay and if he is unable to attend, the officer nominated under Section 15; (3) One member elected by the Syndicate; (4) One member nominated by the Chancellor on the ground of his special knowledge of the subject or subjects for which the teacher is to be appointed.

42. Visva-Bharati

(1) Vice-Chancellor; (2) Principal of the college concerned; (3) A member of the Academic Council selected by the Council on the ground of his special knowledge of and interest in the subject; (4) A member, not an officer or teacher of the university appointed by the Visitor; (5) Other members as follows:

- (a) For professor/reader —Three experts not connected with the university nominated by the Executive Council out of a panel of five selected by the Academic Council.
- (b) For other teaching posts higher than assistant lecturer —one expert not connected with the university nominated by the Executive Council.

43. Varanaseya Sanskrit Vishvavidyalaya

(1) Upa Kulpati; (2) The Head of the Department; (3) Two members elected by Karya Karini Parishad; (4) Two experts (outsiders) in case of pradkypaka and one in case of lecturers.

44. Vikram University

(1) Vice-Chancellor; (2) Dean of the Faculty; (3) Head of the Department; (4) One member of the Syndicate; (5) One outsider appointed by the Vice-Chancellor; (6) One outsider selected by the Academic Council; (7) One expert nominated by the Vice-Chancellor in case of appointment of professor or reader.

Part—B

Institutions Deemed to be Universities

1. Indian Institute of Science, Bangalore :

(a) For professors—(1) Chairman of the Council; (2) An expert nominated by the Visitor; (3) Two persons, at least one of whom is to be an expert nominated by the Council; (4) One expert nominated by the Senate; (5) Director (Ex-officio); (6) Registrar (Ex-officio);

(b) For assistant professors and lecturers: (1) Director (Ex-officio) (2) Two persons, at least one of whom is an expert nominated by the Council; (3) One expert nominated by the Senate; (4) Pro-

fessor-in-charge of the Department/Section; and (5) Registrar (Ex-officio).

2. Gurukul Kangri Vishvavidyalaya

(1) Vice-Chancellor; (2) A nominee of the Visitor; (3) Acharya of Gurukul Kangri (4) Head of the Department concerned; (5) One person not connected with the Vishvavidyalaya nominated by the Syndicate for his special knowledge of the subject; (6) One representative of the Senate and (7) Registrar.

3. Jamia Millia Islamia

(a) For professor: (1) Shaik-ul-Jamia; (2) Dean of the Faculty; (3) Head of the Department concerned (If he is a professor) (4) Two persons who are not employees of the Jamia Millia Islamia and not members of the Majlis-i-Talimi on the Majlis-i-Muntazamiah, nominated by the Majlis-i-Talimi for their special knowledge of or interest in the subject with which the professor will be concerned.

(b) For readers and lecturers (1) Shaikhul-Jamia; (2) Dean of the Faculty; (3) Head of the Department concerned; (4) Two persons who are not employees of the Jamia Millia Islamia and not members of Majlis or the Majlis-i-Muntazmiah, nominated by Majlis-i-Talimi for their special knowledge of or interest in the subject with which the reader or lecturer will be concerned.

4. Indian School of International Studies

(1) President of the Board of Governors; (2) Director; (3) The Head of the Department concerned; (4) Two persons who are not employees of the School, nominated by the Academic Council for their special knowledge of or interest in the subject with which the teacher will be concerned.

APPENDIX 20

NUMBER OF BOOKS ISSUED TO STUDENTS AND TEACHERS DURING THE WEEK JANUARY 15-21

Name of the university	Number of books issued to students	Number of students (1962-63)	Number of books issued to every 10 students	Number of books issued to teachers	Number of teachers in the university teaching departments/colleges (1962-63)	Total number of books issued in the university library (2) + (5)	Total number of borrowers (3) + (6)
1	2	3	4	5	6	7	8
1. Agra University (Central Library)	320	554	6	289	32	609	586
2. Allahabad University	1781	8462	2	179	278	1960	8740
3. Annamalai University	1245	3182	4	801	265	2046	3447
4. Bihar University	—	6094	—	—	257	232	6351
5. Calcutta University	4285	9132	5	431	628	4716	9760
6. Delhi University	—	5518	—	—	344	6294	5862
7. Gauhati University	700	1999	4	140	112	840	2111
8. Gorakhpur University	640	3586	2	60	194	700	3780
9. Gurukul Kangri Vishwavidyalaya	340	—	—	149	—	489	—
10. Jabalpur University	222	464	5	96	22	318	486
11. Jadavpur University	480	3621	1	360	299	840	3920
12. Jammu & Kashmir University	800	355	23	200	42	1000	397
13. Kalyani University	155	470	3	57	48	212	518
14. Karnatak University	206	2501	1	206	193	412	2694

1	2	3	4	5	6	7	8
15. Kerala University	—	189	—	—	44	495	233
16. Kuruksetra University	319	758	4	64	52	383	810
17. Madras University	—	988	—	—	146	1954	1134
18. Marathwada University	210	420	5	73	12	283	432
19. M.S. University of Baroda	—	10106	—	—	432	7335	10538
20. Mysore University	1089	3898	3	195**	283	1284	4181
21. Nagpur University	1017	1545	7	200	98	1217	1643
22. North Bengal University	—	—	—	—	—	200	—
23. Osmania University	1571	12660	1	170	753	1741	13413
24. Panjab University	2104	3573	6	525	217	2629	3790
25. Patna University	2958	10815	3	158	590	3116	11405
26. Poona University	5000	888	56	688	63	5688	951
27. Rabindra Bharati	200	131	15	50	31	250	162
28. Rajasthan University	—	6905	—	—	311	1980	7216
29. S.V. Vidyapeeth	—	588	—	—	51	370	639
30. Saugar University	730	2449	3	107	150	837	2599
31. S.N.D.T. Women's* University	349	2467	1	111	136	460	2603
32. Sri Venkateswara University	652	1135	6	221	142	873	1277
33. Varanaseya Sanskrit Vishvavidyalaya	235	—	—	79	—	314	—
34. Vikram University	889	2384	4	75	106	964	2490
35. Viswa Bharati*	620	490	13	350	115	970	605

* Books issued for reference in the library are not included.

** Including registered graduates.

APPENDIX 21
MEDIUM OF INSTRUCTION AND EXAMINATION

Sl. No.	University	Postgraduate	Undergraduate			Remarks
			Arts	Science	Commerce	
1	2	3	4	5	6	7
1.	Agra University	E/H*	E/H	—	—	* In Arts subjects only
2.	Aligarh Muslim University	E	E	E	E	—
3.	Allahabad University	E/H*	E/H	E	—	* In Arts subjects only.
4.	Andhra University	E	E	E	—	—
5.	Annamalai University	E	E	E	E	—
6.	Banaras Hindu University	E/H*	E/H	E	—	* In Arts and Commerce only
7.	Bhagalpur University	E*	H	H	H	* Hindi has been prescribed as the medium of instruction and examination according to a phased programme.
8.	Bihar University	E	H-EBOU	H-EBOU	H-EBOU	Students are allowed to answer in Bengali at the undergraduate pass level in some papers.
9.	Bombay University	E	E	E	E	
10.	Burdwan University	E	E/B	E/B	E/B	
11.	Calcutta University	E	E/R	E/R	E/R	The medium of instruction in the Bachelor's (Honours) courses is English.
12.	Delhi University	E	E	E	E	Hindi is also allowed in B.A. pass economics, politics, philosophy and history.
13.	Gauhati University	E	E	E	E	—

14. Gorakhpur University	E*	H	E-H	E-H	* Candidates have the option to answer in Hindi.
15. Gujarat University					Gujarati is the medium of instruction but option is given to use English or Hindi as medium of teaching and examination.
16. Gurukul Kangri Vishwavidyalaya	Hindi and Sanskrit				In Science subjects English is the medium of instruction.
17. I.A.R.I., New Delhi					The medium of instruction is English.
18. I.S.I.S., New Delhi					The medium of instruction is English.
19. I.I.Sc., Bangalore					The medium of instruction is English.
20. Jabalpur University	E/H (Arts and Commerce)	E/H	E/H	E/H	—
21. Jadavpur University	E (Science)	E	E	E	In certain papers both at the undergraduate and postgraduate levels students are permitted to answer in the regional languages.
22. Jammu & Kashmir University	E	E	E	E	—
23. Jodhpur University	E-H	H	H	H	—
24. Kalyani University	E	E	E	E	—
25. Karnatak University	E	E	E	E	Colleges are allowed to use a regional language other than English or Hindi as the medium of instruction upto the first year of the three-year degree course subject to availability of books and teachers.
26. Kerala University	E	E	E	E	—
27. Kurukshetra University	E	E	E	E	The students in non-science subjects upto B.A. (Hons.) examination have the option to answer in Hindi or Punjabi.
28. Madras University	E	E	E	E	2 or 3 colleges have attempted to switch on to Tamil which is in an experimental stage.

43. Roorkee University	—	The medium is English	H-EG	H-EG	—
44. S.V. Vidyapeeth	E/H*	H	H	H	• Hindi is allowed in Arts & Commerce Faculties.
45. Saugar University	E	E-M	E	E-M	—
46. Shivaji University	G/M (M.A.)	G/M/H	E (-Nursing)	—	At the postgraduate level, students are given the option to offer English as the medium of examination
47. S.N.D.T. Women's University	E (M.Sc.)	E	G/M/E (Home Science)	—	
48. Sri Venkateswara University	E	E	E	E	—
49. U.P. Agricultural University	—	---	E	—	—
50. Utkal University	E	E	E	E	—
51. Varanaseya Sanskrit Vishwavidyalaya	E/H*	Hindi and Sanskrit	E/H	H	• In Arts Faculty
52. Vikram University	E	E	E	—	Bengali is used as and when convenient
53. Visva-Bharati					

Notations :—

E/H or H/E The medium of instruction is English or Hindi.
E-H The medium of instruction is English but option is given to use Hindi in examination.
E The medium of instruction is English.
H-EBOU The medium of instruction is Hindi but option is given to use English, Bengali, Oriya or Urdu as the medium of examination.
G The medium of instruction is Gujarati.
E-MH The medium of instruction is English but option is given to use Marathi or Hindi as the medium of examination.
E/H/M The medium of instruction is either English or Hindi or Marathi.
E/B or B/E The medium of instruction is either English or Bengali.
E/H/T/U The medium of instruction is either English or Hindi or Telugu or Urdu.
E/H/P/U The medium of instruction is either English or Hindi or Punjabi or Urdu.
H-EG The medium of instruction is Hindi but option is given to use English or Gujarati as medium of examination.
G/M/H The medium of instruction is Gujarati or Marathi or Hindi.
E/M The medium of instruction is English or Marathi.
E/K The medium of instruction is English or Kannada.
E/R The medium of instruction is English or the regional language.

APPENDIX 22

MEDIUM OF INSTRUCTION AND EXAMINATION

1. Agra University The media of instruction are English and Hindi for B.A. and M.A.
2. Aligarh Muslim University The medium of instruction and examination is English.
3. Allahabad University In language classes, teaching and examination are through the respective languages. In other subjects, in the Faculty of Arts, postgraduate teaching is done through English but students have the option to answer the questions through English or Hindi. In undergraduate classes, teaching and examinations have both English and Hindi media. The medium of teaching and examinations in the Faculty of Science is English.
4. Andhra University The medium of instruction and examination is English.
5. Annamalai University English is the medium in all cases.
6. Banaras Hindu University For first degree in Arts English & Hindi.
For first degree in Science/
Technology English
For M.A./M.Sc. & other English. Candidates
postgraduate classes have the option to use
Hindi in examination
in Arts & Commerce
subjects.
7. Bhagalpur University The medium of instruction in all non-language subjects for B.A./B.Sc./B/Com. is Hindi. For other examinations, the medium for non-language subjects is English.
8. Burdwan University The medium of instruction is English. At the undergraduate level and in pass course the teachers are free to use Bengali or English as the medium of instruction and students are allowed to answer some papers in Bengali or in English in pass course only.
9. Bihar University **Medium of Instruction Medium of Examination**
 - (a) Pre-Univer-Hindi English, Bengali, Oriya and
sity. Urdu.

Medium of Instruction Medium of Examination

	(b) Bachelor's degree.	Hindi	English, Bengali, Oriya and Urdu
	(c) Master's degree	English	English
	(d) Professional courses.	English	English
10.	Bombay University	The medium of instruction and examination at all levels is English.	
11.	Calcutta University	For Master's degree courses and Bachelor's degree (Hons.) courses	English
		For pre-university and Bachelor's degree pass courses	English and regional languages
12.	Delhi University	Graduate level	English. In addition to English, Hindi is also allowed in B.A. pass for the following subjects: economics, political science, philosophy and history.
		M.A. & M.Sc.	The medium of instruction is English.
13.	Gauhati University	The medium of instruction and examination is English.	
14.	Gorakhpur University	Bachelor's degree in Arts	Hindi
		Master's degree	English except in languages. Candidates have the option to answer in Hindi.
		B.Sc., B. Com. B.E., LL. B.	English. Candidates have the option to answer in Hindi or English.
15.	Gujarat University	The Statutes of the university state as follows :	
		(i) Gujarati shall be the medium of instruction and examination.	
		(ii) Notwithstanding anything contained in (i) it will be permissible to use English or Hindi as the medium of instruction and for any student to use English or Hindi as medium of examination.	

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| 16. Gurukul Kangri Vishvavidyalaya | (a) Sanskrit
(b) English
(c) Hindi | In Sanskrit Literature and Eastern Philosophy.
In English Literature and Science subjects.
In other subjects. |
| 17. Indian Institute of Science, Bangalore. | The medium of instruction is English. | |
| 18. Indian Agricultural Research Institute, New Delhi. | The medium of instruction is English. | |
| 19. Indian School of International Studies, New Delhi. | The medium of instruction is English. | |
| 20. Jabalpur University | For Bachelor's degree
For Master's degree | English and Hindi.
English only. |
| | The medium of teaching and examination is the same in undergraduate classes. At the postgraduate level the medium of teaching is English or Hindi in Arts & Commerce subjects. For Science and professional faculties, the medium of examination is English only. | |
| 21. Jadavpur University | The medium of instruction is English at all levels. In certain papers both at the undergraduate and postgraduate levels students are permitted to answer in the regional languages. | |
| 22. Jammu & Kashmir University | The medium of instruction and examination is English. | |
| 23. Jodhpur University | In the postgraduate classes, except in Hindi and Sanskrit, the medium of instruction is generally English. Hindi is the medium upto the degree level. Students are allowed to use Hindi for answering questions at the postgraduate level. | |
| 24. Kalyani University | The medium of instruction and examination is English. | |
| 25. Karnatak University | By and large, English continues to be the sole medium of instruction for all the courses. However, the | |

colleges are also allowed to introduce a regional language other than English or Hindi, as the medium of instruction upto first year of the three-year degree course in Arts, Science and Commerce, subject to availability of suitable text books and teachers to teach in that medium.

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| 26. | Kuruksetra University | The medium of teaching and examination is English in all subjects other than languages. However, the students in non-Science subjects upto B.A. (Hon.) examinations have the option to answer in Hindi or Punjabi. | |
| 27. | Kerala | The medium of instruction and examination is English. | |
| 28. | M.S. University of Baroda | Faculty of Arts | English |
| | | Faculty of Science | English |
| | | Faculty of Commerce | English but the preparatory class students are given the option to answer through the regional language. |
| 29. | Madras University | The medium of instruction is English. Two or three colleges have attempted to switch over to the Tamil medium for the teaching of some subjects in the Humanities which is an experimental stage. | |
| 30. | Marathwada University | English is the medium of instruction but students upto the degree level are allowed to write their answers in Marathi and Hindustani. | |
| 31. | Mysore University | English is the medium of instruction. Kannada is approved as the medium at the pre-university and degree levels on an optional basis. | |

32. Nagpur University **General Courses**

Pre-University.	English, Hindi and Marathi
Bachelor's degree	English, Hindi and Marathi.
Postgraduate	English

Professional Courses

Pre-Com., B.Com., Dip., Ed. and B.Ed.	Hindi and Marathi. English for other courses.
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| 33. | North Bengal University | Pre-University | Bengali and English. |
| | | Bachelor's degree | Bengali and English. |
| | | Master's degree | English. |

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|--------------------------|---|----------------|-------|-------------------|---|
| 34. Osmania University | For pre-university and B.A. the media of instruction are English, Hindustani, Telugu and Urdu, and for Master's degree English only. | | | | |
| 35. Panjab University | English is the medium of instruction and examination is Science subjects at all levels. In other subjects use of Hindi, Punjabi and Urdu is permissible upto the undergraduate stage. | | | | |
| 36. Patna University | For pre-university and degree classes the medium of instruction is Hindi and for professional and Master's degree courses it is English. | | | | |
| 37. Poona University | It is the policy of the university to permit the use of Marathi as the medium of instruction and examination upto a certain level. Accordingly, instruction is allowed to be provided in English and Marathi upto the degree level. English is the compulsory medium for courses leading to the Master's degree. | | | | |
| 38. Punjabi University | The Act provides for the gradual adoption of Punjabi as the medium of instruction and examination for as many subjects as possible. Punjabi has been prescribed, to begin with, as the medium of instruction and examination upto first degree level in the subjects of economics, history, civics and political science. The students have the option to answer their questions in Hindi, Punjabi or English. For all other subjects and in the Faculties of Medicine, Engineering and Science the medium of instruction and examination is English. | | | | |
| 39. Rabindra Bharati | Bengali is used as the medium of instruction and examination for the diploma and degree courses; the option of using English is permissible. | | | | |
| 40. Rajasthan University | The medium of instruction is both Hindi and English. The medium used by the candidate in the examination depends upon his choice. | | | | |
| 41. Ranchi University | <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">Pre-University</td> <td>Hindi</td> </tr> <tr> <td>Bachelor's degree</td> <td>Hindi (except in professional courses). In the undergraduate courses students have the option of answering in Hindi or English or Bengali or Oriya or Urdu.</td> </tr> </table> | Pre-University | Hindi | Bachelor's degree | Hindi (except in professional courses). In the undergraduate courses students have the option of answering in Hindi or English or Bengali or Oriya or Urdu. |
| Pre-University | Hindi | | | | |
| Bachelor's degree | Hindi (except in professional courses). In the undergraduate courses students have the option of answering in Hindi or English or Bengali or Oriya or Urdu. | | | | |
| 42. Roorkee University | The medium is English. | | | | |

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| 43. Rajasthan Agricultural University | The medium is English. | |
| 44. U.P. Agricultural University | The medium of instruction is English. | |
| 45. Utkal University | The medium of instruction is English. | |
| 46. S.V. Vidyapeeth | The medium is Hindi with option to use English or Gujarati for all courses of study leading to degree examination, except for B.Sc. (Dairy Technology) and B.Sc. (Vet Sc.) in which it shall be English upto June 1966 and thereafter Hindi with option to use English or Gujarati. | |
| 47. Shivaji University | English is the medium of instruction and examination at all levels. However, Marathi has been allowed as an optional medium for B.A., B. Com., B. Ed., T.D. and non-Science subjects at pre-professional examinations. | |
| 48. Saugar University | B.A., B.Sc., B.Com.
M.A., M.Com.
Other subjects | Hindi
Hindi and English
English |
| 49. S.N.D.T. Women's University | B.A.
M.A.
B.Sc. Nursing
B.Sc. Home Science
M.Sc. Home Science
B.Ed. & M.Ed.
B.Lib. Science | Gujarati, Marathi and Hindi.
Gujarati, Marathi.
English
Gujarati, Marathi,
English
English
Gujarati, Marathi
English |
| | The students are permitted to offer English as the medium of examination if their mother tongue is other than Gujarati, Marathi or Hindi. | |
| | At the postgraduate level all students are given the option to offer English as the medium of examination. | |
| 50. Sri Vekateswara University | The medium of instruction and examination is English. | |
| 51. Varanaseya Sanskrit Vishvavidyalaya | Hindi and Sanskrit for all subjects except additional English. | |

52. Vikram University

Faculty	Undergraduate	Postgraduate	Remarks
Arts	Hindi	English or Hindi	Except language subjects.
Science	Hindi & English	English	—do—
Commerce	Hindi	English	—do—
Education	Hindi & English	English	—do—
Physical Education, Engineering, Agriculture, Vet.Sc. & A. H. and Medi- cine	English	English	—do—
53. Visva Bharati	In B.A./B.Sc. (Hons.), B. Ed. and M.A. classes the medium of instruction is English. Bengali is used as and when convenient.		

APPENDIX 23

UNIVERSITIES WITH PROVISION FOR TUTORIALS

	Periods per week allotted to tutorials	Weightage allowed to tutorials in final assessment.
1	2	3
1. Andhra University	2	No weightage is given.
2. Annamalai University	2	Average marks for the year are taken into consideration for purposes of selection and promotion but no weightage is given in the final examination.
3. Banaras Hindu University.	1 in each theory paper.	In each optional subject 100 marks are allotted as sessional marks and are added to the marks secured in written papers and practicals. They are taken into account in declaring the division. If 600 marks are allotted for six theory papers during three years, the corresponding sessional marks are 300.
4. Bhagalpur University	Postgraduate Honours Pass Course	2 (per group) 2 (per group) 2 (per group)
5. Bihar University	2 in English and 1 in other subjects.	Attendance at 10 tutorials for degree I examination, and 20 tutorials for degree II examination is essential.
6. Calcutta University	Not fixed	No weightage is given for final examination.
7. Gauhati University	1	50% of the marks obtained in the tutorial and sessional seminars are reserved for final examination. These are taken into account after standardising with the external practical marks.

1	2	3
8. Gujarat University	1 for every paper of 100 marks.	30% of the marks are reserved for internal evaluation in each subject of the examination and it is compulsory for a student to pass in the internal as well as the university examination separately.
9. Jabalpur University	1	Attendance at 75% of the classes of tutorial instruction in each subject of the course (other than composition in language) is compulsory for admission to the examination.
10. Jadavpur University		70% attendance at the tutorial classes with 40% marks on the average is compulsory for admission to B.A., B.Sc., M.A. M.Sc. examinations (Tutorials are not held in all the Science subjects) A 100 mark paper is added to the B.A. (Final) and M.A. examinations and is apportioned as under: 40 marks for tutorial work during the entire course of study. 40 marks for annual examination. 20 marks for <i>vi-a-voce</i> .
11. Karnatak University	6 per year in each subject.	
12. Madras University	2	
13. Marathwada University	1	20% of the marks of the annual examination are assigned for tutorial and class work.
14. Magadh University	1	Attendance at 75% of the lectures, tutorials and/ or practicals, as the case may be, is necessary for admission to the university examination.

1	2	3
15. M.S. University or Baroda	Three times in a year in the form of examination.	30% marks are assigned for each paper and counted towards the annual examination result.
16. North Bengal University	1	Under consideration.
17. Osmania University	1	This work is taken into consideration in promotion and final examinations.
18. Poona University	5 in each paper in a year.	20% of the marks of the term work done are reserved for pre-degree examinations only.
19. Punjabi University	4	20% of the marks are reserved for internal assessment.
20. S.N.D.T. Women's University	2	At present no weightage is given to tutorials in the final examination.
21. Saugar University	2 to 3	—
22. S.V. Vidya-peeth.	1/2 for a paper of less than 75 marks; 1 for a paper of 75 to 100 marks.	20% of the total marks for a subject are assigned to tutorial tests, wherein it is essential to pass separately in each of them.
23. Visva-Bharati	2 in each subject.	20% of the marks allotted to tutorial work are taken into account in the final university examination.

In the University of Kerala, the marks scored for sessional work are added to the marks in the university examination.

APPENDIX 24
RESIDENTIAL FACILITIES FOR TEACHERS* 1964-65

Sl. No.	University	Number of teachers**	Number of staff quarters	Percentage of teachers having staff quarters
1.	Agra University	3,881	357	9.2
2.	Aligarh Muslim University	478	114	23.8
3.	Allahabad University	557	147	26.4
4.	Andhra University	2,583	190	7.4
5.	Andhra Pradesh Agricultural University	284	1	0.4
6.	Annamalai University	364	113	31.4
7.	Banaras Hindu University	789	339	43.0
8.	Bangalore University	1,084	9	0.8
9.	Bhagalpur University	1,148	108	9.4
10.	Bihar University	1,425	166	11.6
11.	Bombay University	3,214	126	3.9
12.	Burdwan University	1,271	266	20.9
13.	Calcutta University	6,600	432	6.5
14.	Delhi University	1,897	292	15.4
15.	Gauhati University	2,636	361	13.7
16.	Gorakhpur University	1,087	125	11.5
17.	Gujarat University	3,070	272	8.9
18.	Indra Kala Sangit Visva-vidyalaya	7	N.A.	N.A.
19.	Indore University	536	21	3.9
20.	Jabalpur University	627	166	26.5
21.	Jadavpur University	345	30	8.7
22.	Jammu and Kashmir University	813	22	2.7
23.	Jawaharlal Nehru Krishi Visva-vidyalaya	263	96	36.5
24.	Jiwaji University	642	49	7.6
25.	Jodhpur University	394	9	2.3
26.	Kalyani University	121	73	60.3
27.	Karnatak University	1,457	250	17.2
28.	Kerala University	4,254	318	7.5

* Includes teachers of colleges.

** Includes Demonstrators and Tutors.

Sl. No.	University	Number of teachers	Number of staff quarters	Percentage of teachers having staff quarters
29.	Kuruksetra University	168	101	60.1
30.	Lucknow University	1,116	118	10.6
31.	Madras University	5,989	805	13.4
32.	Magadh University	1,017	49	4.8
33.	Marathwada University	684	63	9.2
34.	M.S. University of Baroda	676	158	23.4
35.	Mysore University	1,787	163	9.1
36.	Nagpur University	1,929	98	5.1
37.	North Bengal University	498	105	21.1
38.	Orissa University of Agriculture & Technology	106	150	141.5
39.	Osmania University	2,083	121	5.8
40.	Panjab University	4,000	713	17.8
41.	Panjab Agricultural University	534	172	32.2
42.	Patna University	645	73	11.3
43.	Poona University	1,791	130	7.3
44.	Punjabi University	409	45	11.0
45.	Rabindra Bharati	54	N.A.	N.A.
46.	Rajasthan University	1,945	254	13.1
47.	Ranchi University	1,285	415	32.3
48.	Ravi Shankar University	733	141	19.2
49.	Roorkee University	218	138	63.3
50.	S.V. Vidyapeeth	503	163	32.4
51.	Saugar University	1,142	245	21.5
52.	S.N.D.T. Women's University	313	5	1.6
53.	Shivaji University	1,043	63	6.0
54.	Shri Venketeswara University	1,212	178	11.4
55.	Udaipur University	352	27	7.7
56.	Utkal University	1,698	512	30.2
57.	U.P. Agricultural University	103	82	79.6
58.	Varanaseya Sanskrit Visvavidyalaya	75	1	1.3
59.	Vikram University	986	84	8.5
60.	Visva-Bharati	199	140	70.4

APPENDIX 25

OBJECTIVES OF TEACHING (CHEMISTRY AND POLITICAL SCIENCE)

Chemistry

1. The students will acquire knowledge of the basic facts and principles of chemistry.
2. The students will develop manipulative skill and the ability to use scientific apparatus.
3. The students will be able to perform experiments and give evidence of appropriate use of the scientific method.
4. The students understand the interrelationships between various branches of chemistry.
5. The students are able to apply chemistry to daily life.
6. The students will be aware of the impact of discoveries in chemistry on related fields such as physics, biology, medicine etc.
7. The students will develop an attitude of enquiry.
8. The students will develop the ability to present and interpret chemistry research and findings in a clear and meaningful form.
9. The students will develop an appreciation of nature.
10. The students understand the impact of discoveries in chemistry on the soil structure and economic life and conditions of the people.
11. The students will develop the ability to analyse and understand the social and industrial problems in which science is involved.

Political Science

1. The student will acquire knowledge of fundamental political concepts and institutions and the changing role of the state.
2. The student will develop the ability to relate political science to the other social sciences.
3. The student will develop the ability to observe and evaluate current developments in politics at the national and international level.
4. The student will develop an appreciation of the contributions of the individual and state to social progress.
5. The student will develop the ability to critically assess traditional beliefs, institutions and behaviour patterns in relation to the functions of the state.
6. The student will develop the ability to discuss controversial problems in a dispassionate way and to formulate judgments.
7. The student will develop the ability to apply knowledge of political science to solve current problems in politics and administration.

APPENDIX 26

CONDITIONS LAID DOWN BY THE UNIVERSITIES OF ANDHRA, DELHI AND MADRAS FOR THE AFFILIATION OF COLLEGES

Andhra University

A college applying for affiliation to the university shall send a letter of application to the registrar and shall satisfy the Syndicate :—

- (a) that the college is to be under the management of a regularly constituted governing body on which, except in the case of a government college, teaching staff is adequately represented;
- (b) that the character and qualifications of the teaching staff and the conditions governing their appointments and tenure of office are such as to make due provision for the courses of instruction to be undertaken by the college and that due proportion is maintained between the number of the staff and that of the students under instruction;
- (c) that the buildings in which the college is to be located are suitable, that each lecture room is well lit and ventilated, and that there is in the college buildings accommodation adequate to the number and strength of the class as regards rooms, floor space and cubic space; and that provision will be made, in conformity with the provisions of the Code, for the residence in the college or in lodgings approved by the college, of students not residing with their parents or duly recognised guardians and for the supervision and physical welfare of students;
- (d) that due provision has been or will be made for a library;
- (e) that where affiliation is sought in any branch of experimental Science, arrangements have been or will be made in conformity with the provisions of the Code for imparting instruction in that branch of Science in a properly equipped laboratory or museum;
- (f) that due provision will, so far as circumstances may permit, be made for the teaching staff in or near the college or the place provided for the residence of students;
- (g) that the financial resources of the college are such as to make due provision for its continued maintenance;
- (h) that the endowment of the permanent fund of the college (other than government college) shall be in the joint names of the university and the governing body of the college.

- (i) that the affiliation of the college having regard to the provision made for students by other colleges in the same neighbourhood will not be injurious to the interests of education or discipline;
- (j) that the college rules fixing the fees (if any) to be paid by students have not been so framed as to involve such competition with any existing college in the same neighbourhood as would be injurious to the interests of education;
- (k) that in the case of colleges for women, the staff will be wholly, or almost wholly, composed of women, and that ample space will be provided for games and physical exercise;
- (l) that no student of the college will be compelled by the management or the staff of the college to attend any classes or discourses in religion against his will;
- (m) that the grades of salaries proposed are adequate and that these grades once approved shall not be lowered without the prior approval of the Syndicate, provided that the Statute is not made applicable to government institutions.

The application shall further contain the assurance that after the college is affiliated the management will confirm to abide and be bound by the provisions of the Code of the University for the time being and will report forthwith to the Syndicate any transference of management and all changes in the teaching staff for its approval.

The college shall also pay to the university an affiliation fee calculated, in the case of first application for affiliation, at the rate of Rs. 150 (or Rs. 100 in the case of an oriental college) for each member of the inspection commission appointed by the Syndicate and in the case of application for further affiliation at the rate of Rs. 100/- (or Rs. 50 in the case of an oriental college) for each such member.

Members of the inspection commission shall be paid the said fees and travelling allowances as may be prescribed.

Managements applying for affiliation should also pay the travelling allowance at first class rates or at rates admissible to members of the Senate, whichever is incurred by the university, in conducting local enquiry inspections.

(a) *Capital Fund*

(1) So far as new colleges are concerned, Rs. three lakhs should be deposited by the management of an affiliated college before an application is made to the university for affiliation. An additional deposit of half-a-lakh should be made if the application for affiliation is for inclusion of a group of 3 Science subjects including mathematics.

(2) For every additional Science subject an additional sum of Rs. 25,000/- should be deposited. No such additional deposit need be made if the affiliation is for an Arts subject.

(3) As regards colleges which have already been affiliated for the intermediate and which may now seek affiliation for opening the degree courses, it is recommended that the capital fund required for them by the Syndicate when the affiliation was granted may be taken into account.

(b) *Equipment*

(1) Equipment should be standardised for each subject by experts in the subjects in terms of articles required as absolutely essential, for proper instruction. Even in regard to the library, a standardised list of books for each subject and for general reference should be prepared and circulated. This standardisation should be done by special committees appointed for the purpose by the Syndicate and they should prepare the list in terms of articles and not in money. There is no objection if, besides this, the expert committees prepare separate lists of "desirable" books for purchase.

(2) Equipment includes scientific apparatus, library furniture etc. and under all these heads there can be two lists "Essential" and "Desirable".

(3) So far as equipment including library is concerned the provision of basic equipment should be a pre-requisite to the starting of the classes.

(c) *Building*

(1) Before affiliation is granted, the managing committee of the college should not only submit its plans for the building which the management proposes to construct but also provide a site of at least 10 acres in extent exclusive of the site for playfields and hostels.

(2) No affiliation should be granted unless the Syndicate is satisfied that the site is actually in the possession of the college at the time of affiliation or at the latest before permission is granted for the opening of the college.

(3) Within a period of 5 years from the establishment of the college, the whole building programme must be completed. In order to facilitate this the committee recommends that the Syndicate may be empowered to permit the management to transfer from capital fund two thirds of the amount towards building purposes.

(4) When affiliation in a new subject is applied for by a college and additional accommodation is necessary for the purpose, the managing committee while applying for affiliation should also send plans for such additional accommodation and the management should undertake to provide this accommodation within two years.

(d) *General*

(1) If any of the conditions are not fulfilled the affiliation for junior classes should first be withdrawn and the affiliation of other classes progressively in subsequent years.

(2) The Syndicate should not appoint an inspection commission for granting affiliation unless the above basic conditions are reported to

have been satisfied by the managing committee in their application. Such commission when appointed should deal only with academic matters and not make any recommendations in regard to the financial provisions which, in the opinion of the committee, should be uniformly applied to all institutions.

(3) After a college has been granted affiliation a copy of the conditions of affiliation should be sent to the Director of Public Instruction so that he may be able to draw the attention of the university to any non-fulfilment which might have escaped the attention of the university.

(4) In order to check unauthorised diversion of monies from one head to another by the managements as well as to check unauthorised collection of special fees by them, there should be close cooperation between the university and the Director of Public Instruction in the matter of exchange of information.

Delhi University

1—(A) A college seeking recognition as a constituent college must have an endowment fund of Rs. 5 lakhs of which at least Rs. 3 lakhs should be immediately available and the balance to be deposited within four years and have either suitable buildings or a building fund of at least Rs. 3 lakhs. It shall also satisfy the university that either it already has 7-8 acres of land (4-5 if there is no hostel attached) or has reasonable prospects of having the same for the college building.

A college seeking recognition as an affiliated college must have an endowment fund of Rs. 3 lakhs of which Rs. 2 lakhs should be immediately available and the balance to be deposited within two years, and have either suitable buildings or a building fund of at least Rs. 2 lakhs. It shall also satisfy the university that either it already has a minimum of 3 acres of land (or 5 acres of land if hostel is attached) or has reasonable prospects of having the same.

Madras University

1. *Land*: The campus for a college situated in an urban area, recognised as such by the university should have a total of 20 acres of which 10 to 15 acres may be in one site, and the rest in another site, perhaps a little away from the college. In other cases 40 acres will be needed.

2. *Hostels*: There should be hostels for not more than 60 to 80 students situated either in the college campus or in the second site and ultimately about 50 per cent must be accommodated in such hostels distributed in the campus. Each hostel should be self-sufficient.

3. *Building and Equipment*: The building for the college itself should be a three storeyed building to spare as much space as possible, where it is located in a 10 acre or 15 acre plot. If a college is started in temporary buildings, a plan of the building should be sent forthwith, and it will have to be approved by the university.

As the pre-university course includes the teaching of physical Sciences and natural Sciences, the laboratories for physics, chemistry, botany and zoology with the necessary equipment must be available to the satisfaction of the university. Till permanent buildings are made available with all the necessary laboratories and hostel provision not more than two batches of 80 will be normally admitted to the college.

Quarters for staff may not be possible in urban areas, but it is desirable that quarters for at least the principal and the wardens of the hostels should be provided.

In the case of women's colleges, quarters will be very necessary and where the college is situated in a rural area a site of 40 acres will be necessary and in the case of urban areas 10 to 12 acres will be needed.

4. *Endowment*: An endowment of Rs. 2 lakhs will be necessary, one lakh of the endowment immediately, and one lakh within one year after grant of affiliation. In the case of degree colleges, the total endowment will be Rs. 5 lakhs for the minimum affiliation, and it may be raised depending upon the nature of the affiliation proposed and the number of subjects in which affiliation is granted to the college.

5. *Qualifications and Emoluments*: The staff appointed should conform to the qualifications prescribed by the university. The scales for the teaching staff should be the government scales of pay.

6. *General*: The management of the college should be a registered body. It is suggested that the managing body should consist of not more than nine members, of whom the principal of the college and a member nominated by the Syndicate will be members ex-officio of this body.

The pre-university classes will either be for men only or for women only. In the case of colleges for women for the P.U.C. only women teachers ought to be appointed. The correspondent of a women's college should preferably be a woman. The premises and buildings for the women's college should be utilised only for college purposes or for such academic activities as are needed. These may not be used as general meeting places for a variety of purposes where men and women have all to congregate. If any such building has to be used for such public purposes, such place must be separately walled off from the college with a separate entrance and exit. The women's college should have a trust office and it should not be within its campus.

APPENDIX 27

INTERNAL ASSESSMENT SYSTEM AT THE INDIAN INSTITUTE OF SCIENCE, BANGALORE

1. The examination system at the Institute has been organised on the basis of internal assessment. All students are examined on the basis of sessional work plus written examinations, each of which is allotted 50% marks.
2. Written examinations are of two types (a) open book and notes, (b) closed book and notes. In most courses both these methods are employed simultaneously.
3. In addition to the sessional work and examination, M.E. degree students are required to write a dissertation or project report.
4. Periodical reviews are carried out by the Faculty and the Senate and improvements brought about, whenever necessary.
5. Most departments assign to fresh research students a series of preparatory lectures and laboratory exercises before making a final selection of the topic of research.
6. In the Engineering department and in some of the Science departments, there is a regular advanced course with broadly the same type of assessment and examinations as at the Master's level. Other departments rely on seminars and specific literature surveys to prepare their students.
7. The board of examiners consists of the supervisor and two or three other members, at least two of whom should be external examiners.
8. Examiners are appointed from among well known scientists and specialists. In case the thesis is referred to examiners outside the country, the *viva-voce* is conducted by substitute external examiners.

APPENDIX 28

NUMBER OF POSTGRADUATE COLLEGES (INCLUDING PROFESSIONAL COLLEGES) 1963-64

<i>Sl.No.</i>	<i>Number</i>	<i>Sl.No.</i>	<i>Number</i>
1. Agra University	48	19. Nagpur University	12
2. Andhra University	5	20. North Bengal University	1
3. Banaras Hindu University	11	21. Orissa Agricultural University	1
4. Bhagalpur University	1	22. Osmania University	6
5. Bihar University	2	23. Panjab University	23
6. Bombay University	35	24. Punjab Agricultural University	1
7. Calcutta University	5	25. Punjabi University	3
8. Delhi University	21	26. Poona University	13
9. Gauhati University	3	27. Rajasthan University	14
10. Gujarat University	29	28. Ranchi University	3
11. Jabalpur University	13	29. S.V. Vidyapeeth	1
12. Karnatak University	2	30. Saugar University	18
13. Kerala University	26	31. S.N.D.T. Women's University	4
14. Lucknow University	2	32. Shivaji University	9
15. Madras University	33	33. SriVenkateswara University	2
16. Marathwada University	3	34. Utkal University	5
17. M.S. University of Baroda	2	35. Vikram University	21
18. Mysore University	6	36. Visva-Bharati	2
Total			386

APPENDIX 29

COMBINED PERCENTAGE OF I AND II DIVISIONS IN THE B.A./ B.Sc. EXAMINATIONS 1946 and 1961

	B.A.		B.Sc.	
	1946	1961	1946	1961
Agra University	40.0*	23.7†	80.0*	74.0†
Allahabad University	44.0	45.6	54.0	56.1
Andhra University	23.4	3.9	48.0	21.9
Banaras Hindu University	42.4	25.8	63.5	66.3
Bombay University	22.0	32.0	40.0	49.8
Calcutta University	18.0	0.7	23.0	14.4
Lucknow University	26.0	21.2	70.0	56.1
Madras University	17.0	15.4	45.0	59.5
Panjab University	26.0	15.7	26.0	52.1

*Report of the University Education Commission Vol. I 1948-49, pp. 98-99

†Universities Statistical Digest Sept. 1963. p. 32

B.Sc. Engineering 1962-63

	1	2	3	1	2	3	1	2	3
Jodhpur University	285	232	81.4	269	201	74.7	161	134	83.2
Percentage of failure			18.6			35.3			16.8

Fourth Examination Fifth Examination

	1	2	3	1	2	3	Combined percentage of failure
Jodhpur University	150	90	60.0	134	123	99.2	=69
Percentage of failure			40.0			0.8	
1=Number appeared			2=Number passed			3=Pass percentage	

(Private or external candidates are not included)

DELHI UNIVERSITY (1963) AN ANALYSIS OF EXAMINATION RESULTS

	Hindu College	Hansraj College	Ramjas College	Miranda House	Total	Percentage of failure	Combined percentage of failure
Detained in B.A. I Yr. 1961	21	17	6	26	70	16.1	
Detained in B.A. II Yr. 1961	7	10	7	30	54	15.8	56.4
Detained in University Examination 1963.	19	36	23	30	108	27.6	
Passed in III Division	27	22	32	71	152		
Passed in II Division	2	4	5	16	27		
Passed in I Division	—	—	—	—	—		
	76	89	73	173	411		

STATEMENT OF REPLIES RECEIVED FROM THE VICE-CHANCELLORS OF INDIAN UNIVERSITIES ON EDUCATIONAL GOALS

1. Agra University

(a) Imparting of sound education and developing the capacity of clear analysis, sound judgment and balanced outlook. (b) Development of certain moral qualities which make for healthy citizenship. (c) Development of the quality of initiative and self-reliance and to prepare students for gainful occupation. These goals should be sought to be realised by a thorough reform of the system of education by improving the quality of teachers.

2. Aligarh Muslim University

(a) The imparting of existing knowledge and skills. (b) Furtherance of knowledge. (c) Development of personality. (d) Training for leadership, vocations, community and social life.

Special interests of the university are (a) To furnish the Muslim community with leaders in every walk of national life. (b) To preserve and promote their traditional culture and civilization. (c) To study the various aspects of Indian civilization, with particular emphasis on the study of the contribution of Islam. (d) India's contribution to the evaluation of Islamic thought and civilization.

3. Allahabad University

(a) To meet the requirements of higher personnel required by the country in different fields. (b) Advancement of knowledge. (c) Promotion of high ideals.

4. Andhra University

The main objective of the university is to impart teaching at the undergraduate and postgraduate levels. Although teaching and research go together, there is an over-emphasis these days on research dissociated from good teaching. It is wrong to think that a teacher has no value unless he is a researcher.

5. Annamalai University

(a) Dissemination of sound knowledge (b) Extension of knowledge in the various fields, both pure and applied. (c) Training in leadership. (d) Meeting the growing needs of the country.

6. Banaras Hindu University

To provide the best possible education in different branches of learning. This can be achieved by providing the best facilities for the education

of young men and women. It involves additional financial assistance for the appointment of qualified staff, provision of adequate building accommodation, laboratories, workshops, libraries, hostels etc.

7. Gauhati University

Teaching and research are both vital but in the present context a major share of the resources must go into teaching. Education should be distinguished from instruction. There must be far more emphasis on developing width of knowledge, understanding and judgment.

8. Gorakhpur University

(a) Training of citizens having a broad-based knowledge along with special knowledge of one discipline. (b) Developing sound reasoning and capacity to correlate things (analysis and synthesis).

9. K.S. Darbhanga Sanskrit Vishvavidyalaya

(a) To find out ultimate truth from various angles. (b) To provide means to establish disciplined life amongst teachers and students. (c) To introduce courses of general education based on ancient Sanskrit texts.

10. Karnatak University

(a) Preservation, transmission and extension of knowledge and stimulation of intellectual life and cultural development. (b) Inculcation of a high sense of idealism in teachers and students.

11. Magadh University

Growth of the personality of students.

12. M.S. University of Baroda

Faculty of Arts

Extension of the frontiers of knowledge.

Faculty of Science

Teaching and research. The aim of teaching is to impart specialised training in various subjects and to prepare the student for a professional career and to develop an integrated personality.

Faculty of Education and Psychology

(a) Providing better citizens. (b) Training facilities.

Faculty of Commerce

(a) To train and develop human mind. (b) To refine human feelings and tastes.

Faculty of Technology and Engineering

To prepare students for shouldering responsibilities of administration,

industry, planning, research, production etc. Specialised training should be given to each citizen in one field or other depending on his aptitude.

Faculty of Home Science

To help students develop sensitivity to the problems of the whole country and to prepare students for various professions and to encourage them to be self-analytical and critical.

13. Marathwada University

(a) To provide the undergraduates with broad-based liberal education. So far as professional education is concerned, the aim is to train the student in the professional skills, in addition to providing him with knowledge necessary for the practice of his profession. (b) At the post-graduate stage the aim is to train the student in methods of research if he wishes to follow a research career and to give him specialised training in the branch in which he wishes to specialise.

14. Osmania University

Faculty of Arts

To develop powers of initiative, independent judgement and thinking.
(b) Development of an integrated personality.

Faculty of Science

(a) To develop in students initiative and originality by arousing interest. The emphasis should be on scholarship rather than on preparation for examinations. (b) A close relationship between theory and practical work.

15. Panjab University

(a) Development of personality. (b) Extension of knowledge. (c) Development of critical faculty and habit of inquiry (c) Inclucation of the spirit of search for truth.

16. Punjabi University

(a) To develop the values of culture and citizenship. (b) Building up a democratic and socialistic pattern of society. (c) Stress should be laid on physical efficiency, military training and the study of Science and Technology.

17. Rabindra Bharati

(a) Attainment of a better, fuller and purer life. (b) To help the students in acquiring good manners, habits and tastes.

18. Rajasthan Agricultural University

(a) To prepare the student for citizenship. (b) In a university emphasising professional education, the goal must be to prepare technicians.

19. **Rajasthan University**

(a) Extension of knowledge in various fields. (b) All-round development of society. (c) Promotion of research.

20. **Roorkee University**

1.(a) All-round development of human personality in all its aspects. (b) To provide leadership in the various professions, industry, general administration, politics etc.

2. The special interests of the university are (a) to develop scientific and technical knowledge (b) to stimulate research.

21. **S.V. Vidyapeeth**

(a) Training for citizenship. (b) Preparation for academic and social leadership; (c) Development of creative talents. This can be achieved by a thorough change in the present university curriculum in such a way as to provide enough opportunities to the growing young citizens to display their potentialities.

22. **Saugar University**

Teaching and research.

23. **S.N.D.T. Women's University**

The preparation of young men and women for living a useful life to meet the challenge of the times. The university tries to educate girls and young women so as to make them useful members of the society.

24. **Utkal University**

To develop latent potentialities in the youth so that they may live a life of happiness or satisfaction and also adjust themselves with the society to which they belong.

25. **Vikram University**

(a) Teaching and research. (b) To arrange lectures in non-technical language on advances in modern knowledge for the benefit of the public.

26. **Visva-Bharati**

(a) Attainment of scholarship in a particular field of study. (b) Development of the power of expression. (c) Development of a sense of problems. (d) Training in the technique of applying knowledge of one's country and the world in general.

APPENDIX 33

MINIMUM REQUIREMENTS OF AFFILIATED COLLEGES

In the following analysis, the minimum requirements for the various courses of study in colleges have been worked out on the basis of the optimum size of one thousand students in each college as a unit. If in a particular case, the number of students is more or less, suitable pro-rata modifications may have to be made. Similarly, variations will have to be permitted in the recommended norms and specifications to suit special requirements or conditions.

Common facilities

(a) In keeping with the present trends, it has been assumed that only 50% of the total number of students will opt for subjects in the Humanities and Social Sciences.

(b) The total cost, including the cost of construction, provision of internal and external services, supervision charges, furniture and equipment can be taken @ Rs. 25 per sq.ft. of the built up area in accordance with the current schedule of rates of the C.P.W.D. The accommodation is given in terms of the carpet area and can be converted into built up area by adding 50% of the carpet.

1. Administration

(i)	Principal's room attached with a bath room, P.A.'s room and a retiring room	..	600 sq. ft.
(ii)	Bursar's room	..	150 "
(iii)	Office	..	600 "
(iv)	Office records and stationery	..	500 "
(v)	Stores (General)	..	800 "
(vi)	Common room for boys	..	500 "
(vii)	Common room for girls	..	250 "
(viii)	In case where only one common room is to be provided for boys or girls	..	600 "
(ix)	Cantten including N.R.S. Centre	..	1600 "
(x)	Sports Store	..	500 "
(xi)	Assembly Hall	..	2000 "
Total			7000 sq. ft.

2. Library

(i) *For undergraduate colleges*

(a) Stack accommodation to be provided for

(b) One reading-cum-periodical room for 200 students @ 15 sq. ft. per reader		..	3000	„
(c) Other normal accommodation		..	500	„
Total			5500 sq. ft.	
<hr/>				
(ii) <i>For postgraduate colleges</i>				
(a) Stack accommodation to be provided for 50,000 volumes.		..	3000 sq. ft.	
(b) One reading room for 200 students @ 15 sq. ft. per student		..	3000	„
(c) One periodical room for 100 students @ 15 sq. ft. per student		..	1500	„
(d) Other normal accommodation		..	500	„
Total			8000 sq. ft.	
<hr/>				
(iii) The specific requirements in respect of facilities such as health centre, gymnasium, accommodation for N.C.C., hobby workshop etc. may be determined in consultation with the appropriate authorities.				

Requirements for Arts Subjects

Some of the assumptions made in determining the minimum requirements in respect of physical and other facilities may be stated.

1. It has been assumed that the course in a subject at the undergraduate level is covered by four papers during the course of 3 years and that at the postgraduate level there are 8 papers in each subject including the core—compulsory papers and the areas of specialisation.

2. A minimum of three periods per week for each paper at the undergraduate level and a minimum of three periods per week for each paper at the postgraduate level have been provided in determining the staff requirements.

3. In colleges with facilities for tutorial instruction the lecture classes will comprise 100-150 students and in colleges which do not have tutorial facilities the size of the class will be limited to 80-100 students.

4. A college will generally have provision for the teaching of 6-8 optional subjects and 2-3 compulsory subjects at the undergraduate level and 4-5 optional courses at the postgraduate level in the Humanities and Social Sciences.

5. The maximum workload of teachers in the colleges has been taken at 15-20 lectures per week including tutorials.

6. Tutorial groups in each subject will comprise a maximum of 10 students and will generally meet once a week. Seminars for postgraduate students are arranged once a fortnight, in addition to tutorial work.

7. The workload of teachers and the areas of class rooms etc. have been worked out on the basis of the subjectwise distribution of students given in Tables A and B, which forms one of our basic assumptions. For 8 optional subjects at the undergraduate level out of which a student can offer any three, there will be some 56 different combinations of subjects, e.g. EHP, ÉHP, etc. (E—Economics, H—History, P—Politics, É—English, H̄—Hindi, P̄—Philosophy). Subjects like Economics, History, Politics and regional languages are offered more frequently than subjects like Philosophy, Sanskrit, English Literature etc.

A. Undergraduate colleges which do not have tutorial facilities

1. Lecture Halls

A student will have 5-6 periods a day (two compulsory subjects and three optional subjects) in a 7 period time table. That means we have to provide accommodation for nearly 430 students at a time which may be distributed as under;—

(i) For 100 students—2 rooms @ 10 sq. ft. per student	.. 2000 sq. ft.
(ii) For 75 students—2 rooms @ 12 sq. ft. per student	.. 1800 „
(iii) For 40 students—2 rooms @ 15 sq. ft. per student	.. 1200 „
Total	5000 sq. ft.

Note : The rooms for 75 students are meant for the teaching of compulsory subjects assuming that the classes will be divided into sections because of the large number of students. The rooms for 100 students are for subjects like Economics, History, Political Science, Hindi etc. which are offered more frequently and the rooms for 40 students are for subjects like Sanskrit, Philosophy, English Literature etc.

2. Staff Requirements

It will be seen from Table A that compulsory subjects will have two sections each and the optional subjects will have only one section each. In each subject, (compulsory or optional) there will be 6 periods a week. The staff requirements will therefore, be as under :

Department

- | | |
|--|---|
| 1. English (compulsory and optional) | .. 3 (2 for compulsory and 1 for optional) |
| 2. Hindi or regional language (compulsory and optional). | 3 (2 for compulsory Hindi and 1 for optional) |

3. Economics	..	1
4. Politics	..	1
5. History	..	1
6. Philosophy	..	1
7. Sanskrit	..	1
8. Geography	..	1
Total		12

3. Staff Rooms

6 rooms with an area of 150 sq. ft. each. (Each room can accommodate two teachers with a small partition) Total 900 sq. ft.

B. Additional facilities required for the introduction of tutorials.

(I) Tutorial Rooms

500 students will be divided into approximately 50 tutorial groups and for 5 subjects there will be 250 tutorial classes in a week. We have therefore to make provision for 8 tutorial rooms. The rooms will have an area of 150 sq. ft. each i.e. a total area of 1200 sq. ft.

(II) Staff Requirements

On the basis of the subjectwise distribution of students given in Table A, the staff required for conducting tutorials will be as under :—

1. English (compulsory and optional)	3
2. Hindi or regional language	3
3. Economics	2
4. Politics	1
5. History	1
6. Philosophy	1
7. Sanskrit	1
8. Geography	1
<hr/>	
Total	13

(III). Staff Rooms

6 rooms with an area of 150 sq. ft. each—i.e., a total area of 900 sq. ft.

C. Additional facilities required for the introduction of post-graduate courses

It has been assumed that a college has facilities for postgraduate teaching in the following 5 subjects:— Economics, History, Politics, Hindi or a regional language, English. (for distribution of students at the Bachelor's and Master's levels, please see Table B).

(I) Lecture Rooms

(for previous and final classes in 5 subjects).

for 25 students—6 rooms at 15. sq. ft. per student 2250 sq. ft.

(II) Staff Requirements

It is visualized that at the postgraduate level a teacher will generally specialise in not more than 2-3 areas and therefore the minimum staff required for a postgraduate department will be four lecturers irrespective of the number of students. The following staff will be required in addition to the staff under A & B above. This includes the provision for tutorials and seminars.

1. English	1
2. Hindi or regional language	1
3. Economics	2
4. Political Science	2
5. History	2
Total	<hr/> 8 <hr/>

(III) Staff Rooms

12 rooms with an area of 150 sq. ft. each. In all there will be 8 tutorial rooms under B plus 6 staff rooms under A + 6 rooms under B + 12 rooms under C i.e., a total of 32 rooms with an area of 150 sq. ft. each.

These will be used as study-cum-tutorial rooms.

Additional area required .. 1,800 sq. ft.

The implications of the above recommendations are summarised below:

A. Undergraduate college without facilities for tutorial instruction.

(a) Common facilities	.. 12,500 sq. ft.
(b) Lecture rooms	.. 5,000 „
(c) Staff rooms	.. 900 „
(d) Number of lecturers	.. 12

B. Undergraduate college with facilities for tutorial instruction.

(a) Common facilities	.. 12,500 sq. ft.
(b) Lecture rooms	.. 6,200 „
(c) Staff rooms	.. 1,800 „
(d) Number of lecturers	.. 25

C. Postgraduate college with facilities for tutorials and seminars.

(a) Common facilities	.. 15,000 sq. ft.
(b) Lecture rooms	.. 8,450 „
(c) Staff rooms	.. 4,800 „

(this includes 8 tutorial rooms under B above).

(d) Number of lecturers	.. 33
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TABLE A

DISTRIBUTION OF STUDENTS SUBJECTWISE IN HUMANITIES AND SOCIAL SCIENCES IN THE UNDERGRADUATE CLASSES

	Compul- sory subjects	Compul- sory subjects	Econo- mics	Hindi or a regional language	History	Politics	English litera- ture	Sanskrit	Philo- sophy	Geogra- phy
Part I										
	170	170	105	105	90	95	30	20	30	35
Tutorial Groups	(17)	(17)	(10)	(10)	(9)	(9)	(3)	(2)	(3)	(4)
Part II										
	165	165	100	100	90	90	30	20	30	35
Tutorial Groups	(16)	(16)	(10)	(10)	(9)	(9)	(3)	(2)	(3)	(4)
Part III										
	165	165	100	100	90	90	30	20	30	35
Tutorial Groups	(15)	(16)	(10)	(10)	(9)	(9)	(3)	(2)	(3)	(4)

(a) 2 sections in each of the compulsory subjects and 1 section in each of the optional subjects—for lectures.

(b) Uncommon subjects like Sociology, Statistics, Military Science, Mathematics etc. have not been taken into con- sideration.

TABLE B

DISTRIBUTION OF STUDENTS SUBJECTWISE (HUMANITIES AND SOCIAL SCIENCES) IN THE UNDER-GRADUATE AND POSTGRADUATE CLASSES FOR LECTURES AND TUTORIALS.

(1) Undergraduate

	Compul- sory subjects	Compul- sory subjects	Econo- mics	Hindi or a regional language	History	Politics	English Litera- ture	Philoso- phy	Sanskrit	Geogra- phy
Part I										
Tutorial Groups	120 (12)	120 (12)	80 (8)	80 (8)	60 (6)	60 (6)	20 (2)	20 (2)	15 (2)	25 (3)
Part II										
Tutorial Groups	120 (12)	120 (12)	80 (8)	80 (8)	60 (6)	60 (6)	20 (2)	20 (2)	15 (2)	25 (3)
Part III										
Tutorial Groups	120 (12)	120 (12)	80 (8)	80 (8)	60 (6)	60 (6)	20 (2)	20 (2)	15 (2)	25 (3)

(2) Postgraduate

	Economics	History	Political Science	Hindi or a regional language	English Literature
Previous	20	10	15	20	5
Final	20	10	15	20	5

Tutorials once a week and seminars once a fortnight in each subject

(Science)

The minimum and desirable requirements are given below :

1. The college is assumed to provide training facilities for all the six basic Science subjects. The different combinations are CPM, CPG, CBZ, CBG, where C-Chemistry, P-Physics, B-Botany, Z-Zoology, G-Geology and M-Mathematics.

2. The intake in the first year of the three-year degree course is taken as 100 to 128. The distribution of 128 students in each year is assumed as under :

Part I	C	P	B	Z	G	M
	128	128	32	16	32	80
Part II	128	96	32	16	32	80

and III
respectively.

Therefore, CPM=80, SPG=16, CBZ=16, CBG=16.

3. An area of 10-12 sft. per student has been given in the lecture theatre, whereas an area of 25-30 sft. has been given in the practical laboratory for each student.

4. Each department is expected to have a lecture theatre, a store, preparation room, two laboratories each for Chemistry and Physics and one laboratory each for Botany, Zoology and Geology.

5. Each laboratory is expected to have a capacity of 40 working places whereas lecture rooms will accommodate 128 or 64 students depending on the size of the class.

6. The head of the department works for 16 periods per week whereas the other lecturers of the department work for 18 periods per week including theory and practical.

7. Part I students work on the minimum for about 30 hours per week including theory and practical whereas part II and part III students work for about 33 periods per week including theory and practical.

8. There is only one theory section for each class while for practicals each class is divided into batches.

9. There is a staff-student ratio of 1:16 in the practical classes.

I. Staff Requirements

Subject	Minimum						Desirable					
	H	L	L/ Asstt.	L. Att.	S.	Others	H.	L	L/ Asstt.	L/ Att	S.	others
Chemistry	1	7	2	5	1	2	1	8	3	6	1	8
Physics	1	6	2	1	1	(Gasman)	1	6	3	5	4	—
Botany	1	1	1	2	1		1	2	2	2	1	—
Zoology	1	1	1	1	1		1	1	2	2	1	—
Geology	1	1	1	2	1		1	2	2	2	1	—
Mathematics	1	1	*	*	*		1	2	*	*	*	—

H=Head of the Department

L=Lecturer (including junior and senior lecturers)

L/Asstt=Laboratory Assistant

L/Att. =Laboratory Attendant.

S=Storekeeper

(for staff workload, please see Tables E1, E2 & E3)

II. Building

Building Requirements : (Please see Table C)

Subject	Minimum	Cost	Desirable	Cost
		Rs. (lakhs)		Rs. (lakhs)
Chemistry	6,564	1.64	7,674	1.91
Physics	6,524	1.63	7,724	1.91
Mathematics	2,200	0.55	2,888	0.72
Botany	4,020	1.00	4,824	1.206
Zoology	4,024	1.00	4,824	1.206
Geology	4,024	1.00	4,824	1.206
Common	944	0.24	1,230	0.32

@ Rs. 25/ per sq. ft. including all services.

Additional requirements for the establishment of postgraduate departments in the different Science subjects

The following assumptions have been considered in working out these requirements.

1. The number of students in the different subjects is as under :

Chemistry 10-15, Zoology 8-10, Physics 10-15, Botany 8-10, Geology 8-10, Mathematics 20 in each year (previous & final).

2. An area of 10-12 sft. has been provided to each student in a lecture theatre whereas an area of 50 sft. has been provided to each student in the practical laboratory.

3. Wherever possible, there are common miscellaneous rooms to both the previous and final laboratories.

4. It is assumed that only one special paper in each subject will be taught in the 6th year.

5. While calculating minimum teacher requirements, only two hours lecturing work per day per class per subject has been given to the teachers. The teacher in a practical class takes the first and last period only.

6. In practical classes a student teacher ratio of 8 to 10 has been maintained.

Additional Staff

(Please see Tables D2 & F.)

Subject	Minimum		
	R	L	
Chemistry	1	3	
Physics	1	3	R=Reader or Senior Lecturer or Assistant Professor.
Botany	1	2	
Zoology	1	2	
Geology	1	2	L=Lecturer.
Mathematics	1	2	

Additional Building (Please see Table D1)

sq. ft. cost in lakhs of Rs.

Chemistry	3,900	0.975
Physics	3,900	0.975
Botany	3,100	0.775
Zoology	3,100	0.775
Geology	2,400	0.60
Mathematics	400	0.10

TABLE C

BUILDING REQUIREMENTS FOR THE DIFFERENT UNDER-GRADUATE SCIENCE DEPARTMENTS.

Chemistry	Number	Minimum	Desirable (in sq. ft.)
Room for the Head of the Department	.. (1)	100	144
Office-cum-staff room	.. (1)	200	250
Store	.. (1)	400	500
Lecture room	.. (1)	1000	1200
Laboratories	.. (2)	2720	3200
(including balance room, teachers' room etc.)			
			(2X1600)
Preparation room	.. (1)	144	180
		4564	5474
Ancillary	..	2000	2200
Total		6564	7674

Physics

	Number	Minimum	Desirable (in sq. ft.)
Room for the Head of the Department	.. (1)	100	144
Office-cum-staff room	.. (1)	200	250
Store	.. (1)	300	400
Lecture room	.. (1)	1000	1200
Laboratories	.. (2)	2780	3350
Preparation room	.. (1)	144	180
		4524	5524
Ancillary	..	2000	2200
Total		6524	7724

Botany

Room for the Head of the Department	.. 1	100	144
Office-cum-staff room	.. 1	200	250
Store	.. 1	200	250
Laboratory	.. 1	1324	1580
Museum	.. 1	300	400
Lecture Room	.. 1	700	800
		2824	3424
Ancillary	..	1200	1400
Total		4024	4824

Zoology

Same as in the Botany Deptt. 4024 4824

Geology

Same as in the Botany Deptt. 4024 4824

Mathematics

Head of the Department	.. (1)	100	144
Office-cum-staff room	.. (1)	200	250
Lecture room	.. (1)	800	1000
Small Room	.. (1)	500	694
		1600	2088
Ancillary	..	600	800
Total		2200	2888

TABLE—D1

ADDITIONAL BUILDING REQUIREMENTS FOR POST-GRADUATE DEPARTMENTS IN SCIENCE SUBJECTS.

Chemistry :

	(in sq. ft.)
Lecture room	400
Laboratory (30 × 50)	1500
Preparation Room	300
Balance Room	300
Store	200
	<hr/>
	2700
Ancillary	1200
	<hr/>
Total	3900

Physics : (Same as above)**Botany :**

Lecture Room (10 × 20)	200
Laboratory (20 × 50)	1000
Preparation Room	200
Herberium	200
Physiology	200
Dark Room	100
Museum	200
	<hr/>
	2100
Ancillary	1000
	<hr/>
Total	3100

Zoology : (Same as in Botany except in place of Herberium there is an animal house).

Geology :

Lecture Room	200
Laboratory (20 × 50)	1000
Preparation Room	200
Section Room	200
	<hr/>
	1600
Ancillary	800
	<hr/>
Total	2400

Mathematics :

Lecture Room	400
--------------	-----

TABLE—D2

ADDITIONAL HOURS OF WORK FOR POSTGRADUATE DEPARTMENTS

Chemistry	72 periods per week
Physics	72 " " "
Botany	48 " " "
Zoology	48 " " "
Geology	48 " " "
Mathematics	48 " " "

Additional requirements of laboratory assistants, attendants etc. etc., for the different postgraduate departments in Science subjects.

Subject	Laboratory Assistants	Attendants	Others
Chemistry	2	3	1 (gas man)
Physics	2	3	1 (technician)
Botany	2	2	1 (herberium asstt.)
Zoology	2	2	1 (photographer)
Geology	2	2	1 (surveyor)
Mathematics	—	1	—

Approximate cost of furniture, equipment and library books.

Equipment (Only the costs of the equipment in thousands have been given).

	(Min.)	(Des.)
Chemistry	32	40
Physics	40	50
Botany	40	50
Zoology	40	50
Geology	30	40

Furniture (only the costs of the furniture in thousands have been given).

Chemistry	30	40
Physics	20	25
Botany	30	40
Zoology	30	40
Geology	25	30

Library

Chemistry	8	10
Physics	8	10
Botany	5	7
Zoology	5	7
Geology	5	7
Mathematics	4	6

Additional requirements for postgraduate departments**Equipment** (only the costs of equipment in thousands have been given).

Chemistry	40	50
Physics	40	50
Botany	35	40
Zoology	35	40
Geology	35	40

Furniture (Only the costs of furniture in thousands have been given).

Chemistry	35	40
Physics	25	30
Botany	25	30
Zoology	25	30
Geology	25	30

Library (Each department should have additional books of worth Rs. 10,000/- respectively).

TABLE E 1

DISTRIBUTION OF STUDENTS IN DIFFERENT SCIENCE SUBJECTS IN THE UNDERGRADUATE CLASSES

No. of students in the class	Chemistry	Physics	Mathematics	Botany	Zoology	Geology
Part I. Sections Theory Practical Batches	128 1 4 (of 32)	128 1 4 (of 32)	80 1 80	32 1 1 (of 32)	16 1 1 (of 16)	32 1 1 (of 32)
Part II. Theory Sections Practical batches	128 1 4 (of 32)	96 1 3 (of 32)	80 1 80	32 1 1 (of 32)	16 1 1 (of 16)	32 1 1 (of 32)
Part III. Theory Sections Practical batches	128 1 4 (of 32)	96 1 3 (of 32)	80 1 80	32 1 1 (of 32)	16 1 1 (of 16)	32 1 1 (of 32)

Student/teacher ratio in practicals = 16.

TABLE E 2

TOTAL NUMBER OF HOURS PER WEEK FOR DIFFERENT CLASSES ON THE GIVEN LOAD.

(Undergraduate only)

Part I.	(i) (ii) (iii) (iv)	PCI CBZ (D) CBG (D) CPG	Minimum " " " "	= 16 + tutorials = 30 = 30 = 30	Desirable " " "	36 + tutorials 36 36 36	This includes English = 4 per week Language = 2 per week
Part II.	(i) (ii) (iii) (iv)	PGM CBZ CBG CPG	" " " "	= 27 + tutorials = 33 = 33 = 33	" " " "	30 + tutorials 36 36 36	
Part III. Same as part II							

TABLE—E 3
TOTAL LOAD PER WEEK IN EACH SCIENCE SUBJECT
 (Undergraduate only)

	Minimum	Desirable	Theory	Practical
Chemistry	142	160	14-16	128-144
Physics	118	136	14-16	104-120
Botany	40	47	12-15	28-32
Zoology	26	31	12-15	14-16
Geology	40	47	12-15	28-32
Mathematics.	32	52	14-17	18-36 (Tutorials)

TABLE—F

**ADDITIONAL TOTAL LOAD PER SUBJECT PER WEEK FOR
POSTGRADUATE DEPARTMENTS**

Chemistry		Theory	Practical	
Previous year		12	24	Total load
Final Year		12	24	$24 + 48 = 72$
		<hr/>		
		24	48	
Physics Same as above.				
Botany	} Previous year	12	12	$24 + 24 = 48$
Zoology				
Geology		6	12	
	Final year	6		
		<hr/>		
		24	24	
Mathematics				
Previous year		$6 \times 4 = 24$		
			$24 + 24 = 48$	
Final year		$6 \times 4 = 24$		

APPENDIX 34

A SUMMARY OF THE REPORT ON THE PATTERN OF GRADUATE EMPLOYMENT

Volume of employment

The bulk of the graduates (86.9 per cent) were employed, 9.8 per cent reported themselves to be unemployed and 3.2 per cent were not in the labour force—either prosecuting further studies or were not seeking work. 0.1 per cent of the graduates did not report on this item.

Employment relation to class/division secured in first degree examination

The proportion of the employed graduates was the highest (90.1 per cent) and that of the unemployed the least (4.4 per cent) among graduates who secured first class in the degree examination. The poorer the performance of the graduates in the degree examination, the lesser is the proportion of the employed and the higher the percentage of the unemployed. This confirms the popular belief that examination result is an important determinant of the state of employment or unemployment of the alumni.

Time lag between passing examination and obtaining first employment

One-fourth of the employed graduates secured their first employment prior to 1954, i.e., before passing their degree/postgraduate examination, thereby showing that they were already employed during their period of education. Another 25 per cent of these graduates obtained their first employment in 1954. 18.2 per cent secured their first employment in 1955, 12 per cent in 1956, 6.9 per cent in 1957 and 6.3 per cent in 1958 or later. Graduates in teaching, engineering, veterinary sciences, post-graduates in science and commerce and the doctorates secured their first employment within a short period after passing the examination. 7 out of 10 B.T.'s and 9 in 10 doctorates were already employed during their period of study.

Occupational pattern of employed graduates

86.9 per cent of the employed graduates were engaged in occupations belonging to the three major occupational groups—professional, technical and related workers, administrative, executive and managerial workers and clerical and related workers. Contrary to popular expectations, the majority (57.3 per cent) of the graduates were employed as professional, technical and related workers as opposed to clerical workers who accounted for about one-fifth of the employed graduates. Less than 3 per cent were

engaged in transport and communication occupations, 1.2 per cent were sales workers and the other occupations accounted for insignificant proportions of the employed graduates. A faculty-wise analysis reveals that the overwhelming majority of the graduates in teaching, engineering, medicine and veterinary science and of the M.Sc.'s and Ph.D.'s were employed as professional, technical and related workers. More than half of this group were teachers. The percentage of graduates employed as administrative, executive and managerial workers was relatively high among graduates in law and postgraduates in commerce. In so far as clerical occupations are concerned, the two faculties that contributed a major share of the employed alumni were B Com., and M. Com., the proportion of employed alumni of these two faculties who were engaged in clerical jobs being 43.3 per cent and 25.4 per cent respectively. A sizable fraction of graduates in arts, science, law and postgraduates in arts were employed in clerical occupations.

Employment status

Most of the graduates (89.3 per cent) were working as employees—6.5 per cent of them were self-employed, 1.6 per cent were engaged in family enterprise and only 0.7 per cent were employers. The proportion of the self-employed was higher among graduates in law and medicine as compared to the figures for all faculties as a number of them were doing private practice. It is, however, interesting to note that even among law and medical graduates, the proportion working as employees was considerably more than that of the self-employed thus showing that the majority of these graduates preferred salaried employment to private practice.

Change in employing agency

Half of the employed graduates did not change their employer till the date of the survey, about one-fourth changed their employer once, 12 per cent changed twice, about 5 per cent thrice and 2 per cent four times or above. The extent of change in employer was particularly high among professional degree holders such as engineers and doctors and among M.Sc.'s and Ph. D's. On the other hand, the extent of this type of mobility was low among graduates in arts, commerce and law and veterinary science.

Change in occupation

While 22.1 per cent of the alumni took up their first job in clerical occupations, 19.5 per cent of them were currently employed in the same group—thus showing that some of the alumni who started their careers as clerks shifted to other more satisfying occupations in course of time. Also it is observed that whereas 6.2 per cent of the employed graduates took up administrative, executive and managerial jobs in their first employment, 10.1 per cent of the graduates were currently employed in this group.

This indicates that a number of graduates changed over to administrative, executive and managerial jobs with passage of time.

Sector of employment

The bulk of the graduates were employed in the public sector—about 58 per cent took up their first employment in the public sector while 64 per cent were currently employed in the same sector. The private sector absorbed 35 per cent and 29 per cent of the employed graduates insofar as their initial employment and present employment respectively are concerned. It is also observed that with passage of time quite a number of graduates who had secured their initial employment in the private sector changed over to jobs under the public sector.

Means of securing employment

Bulk of the graduates obtained their employment by direct applications—the proportion who obtained their initial employment and present employment in this manner being 64.8 per cent and 57.3 per cent respectively. The proportion of graduates who obtained employment through Public Service Commissions was 8.3 per cent and 16.4 per cent insofar as their first employment and current employment respectively are concerned. About 6-7 per cent of the graduates secured employment through the employment exchanges. It is observed that with passage of time more graduates changed over to other employment through recognised mode of recruitment such as Public Service Commissions.

APPENDIX 35

NUMBER OF TEACHERS WHO LEFT PERMANENT UNIVERSITY JOBS FOR NON-ACADEMIC JOBS DURING THE LAST 5 YEARS.

Number of teachers	
1.	2.
1. Agra University (K.M. Institute)	3
2. Andhra University	1
3. Bihar University	1
4. Gauhati University	1
5. Gorakhpur University	5
6. Gujarat University	100 A
7. Jadavpur University	4
8. Karnatak University	2
9. Kuruksetra University	10
10. Magadh University	1
11. M.S. University of Baroda	1
12. Mysore University	B
13. Panjab University	1
14. Patna University	C
15. Ranchi University	D
16. S.V. Vidyapeeth	5 E
17. Saugar University	1
18. Sri Venkateswara University	2
19. Visva-Bharati	1

A — In affiliated colleges

B — Quite a good number

C — Some

D — Yes

E — 2 in the university and 3 in constituent colleges

APPENDIX 36

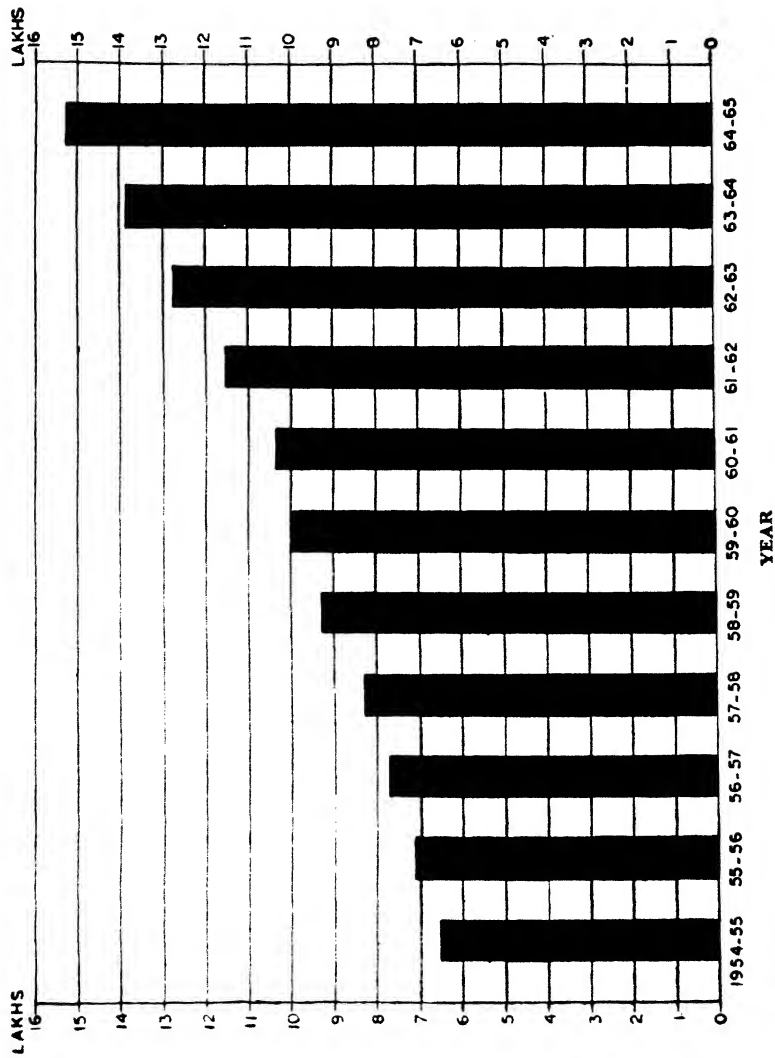
NUMBER OF STUDENTS ENTERING HIGHER EDUCATION IN SELECTED COUNTRIES (1958-59)

Thousands

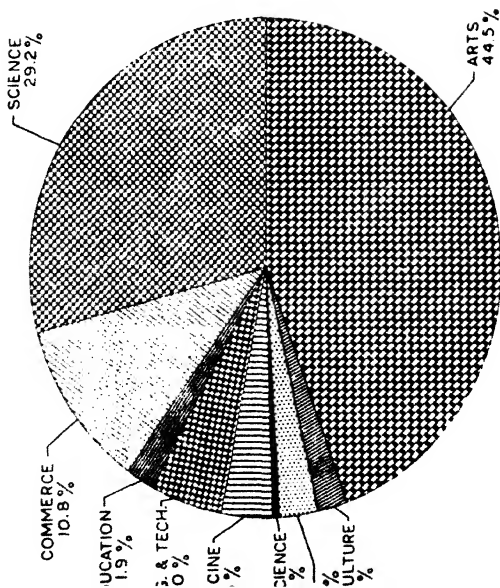
		Full-time courses only		All methods of study	
		Courses of British degree level (1)	All levels of higher edu- cation (2)	Courses of British degree level (3)	All levels of higher edu- cation (4)
Great Britain	..	29.6	48.8	42.2	79.1
Australia	..	4.9	9.7	8.4	16.4
Canada	..	31.4	44.4	45.6	58.6
France	..	44.7	51.4	44.7	53.4
Germany (F.R.)	..	38.5	60.6	38.5	62.6
Netherlands	..	6.2	1.8	6.2	13.0
New Zealand	..	1.6	3.2	2.9	5.1
Sweden	..	6.4	10.0	0.0	11.0
Switzerland	..	3.8	..	3.8	..
U.S.A.	..	448.4 (junior years)	679.2	494.3 (junior years)	793.3
U.S.S.R.		215.5	215.5	455.9	455.9

Source:—Robbins Committee's Report—Appendix V, p. 8.

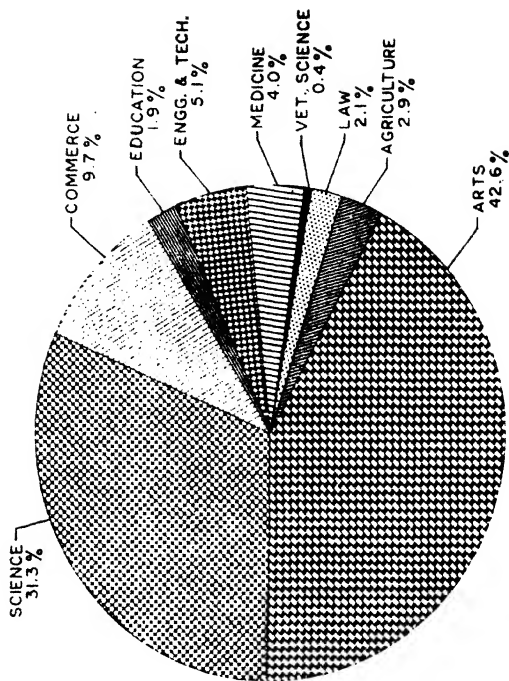
**UNIVERSITY ENROLMENT
INCLUDING ENROLMENT UNDER BOARDS OF INTERMEDIATE EDUCATION
1954-55 TO 1964-65**



**UNIVERSITY ENROLMENT IN DIFFERENT FACULTIES
INCLUDING ENROLMENT UNDER BOARDS OF INTERMEDIATE EDUCATION**

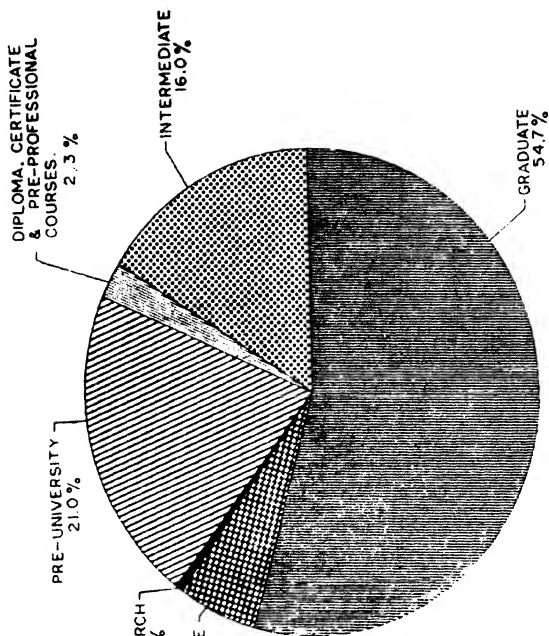


1961-62

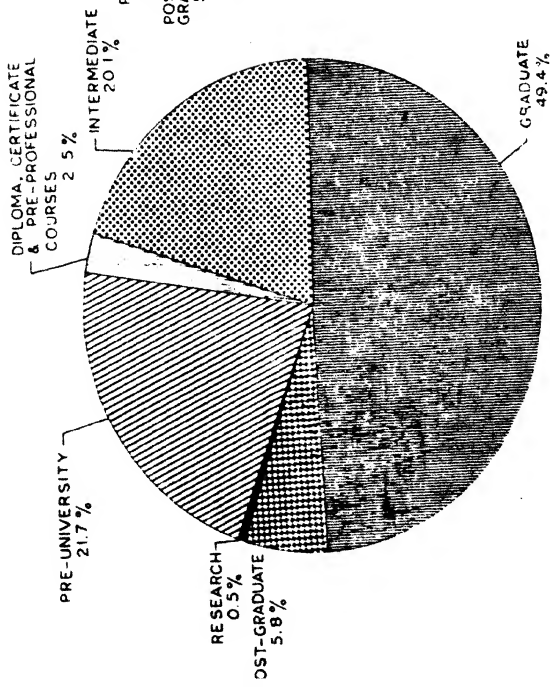


1964-65

UNIVERSITY ENROLMENT AT DIFFERENT STAGES INCLUDING ENROLMENT UNDER BOARDS OF INTERMEDIATE EDUCATION

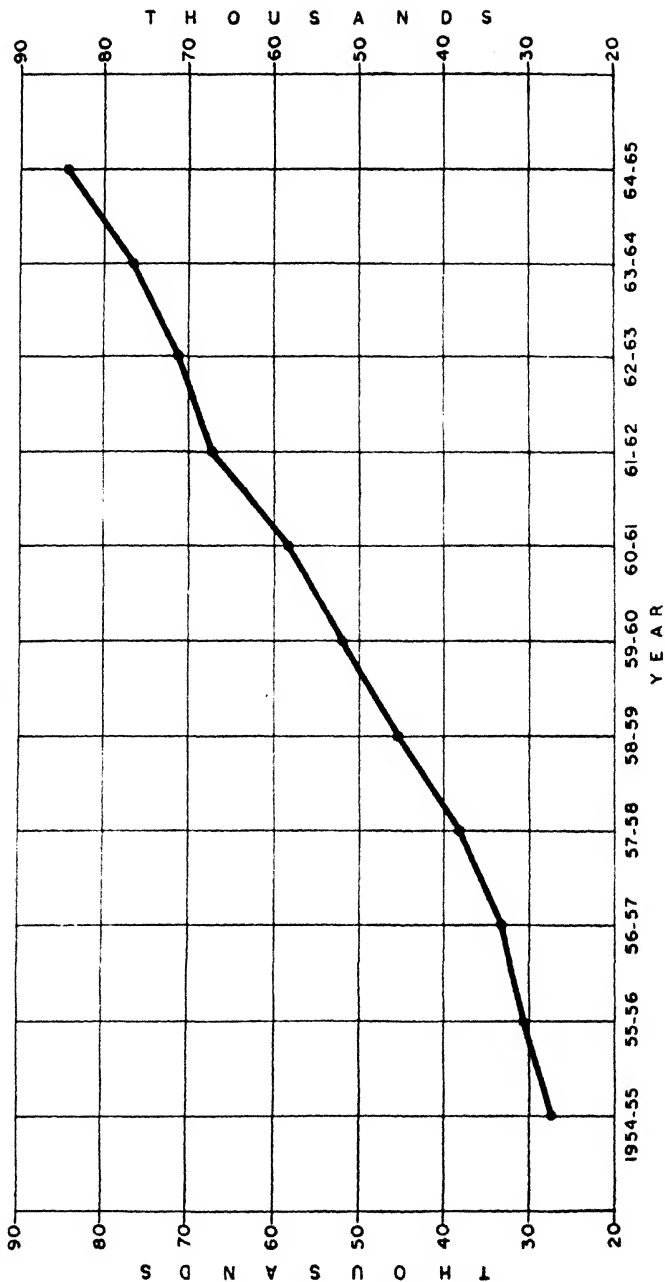


1964-65

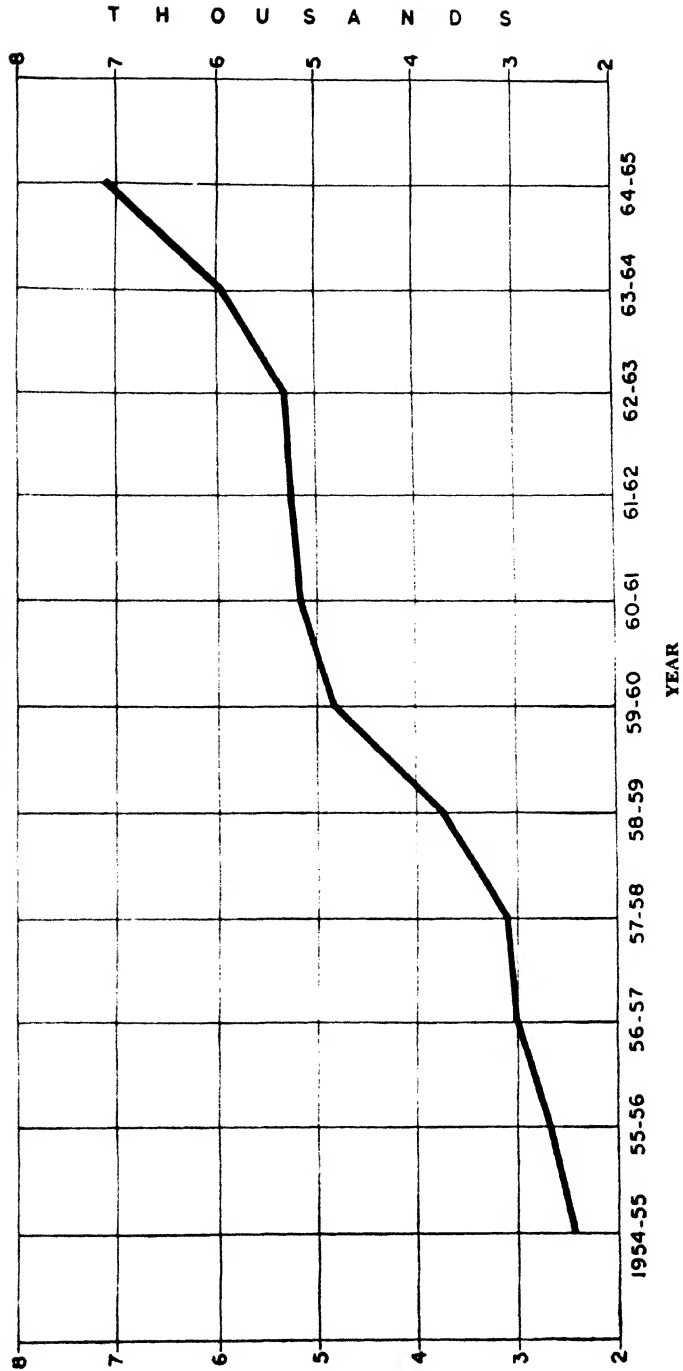


1961-62

POSTGRADUATE ENROLMENT INCLUDING ALL FACULTIES 1954-55 TO 1964-65

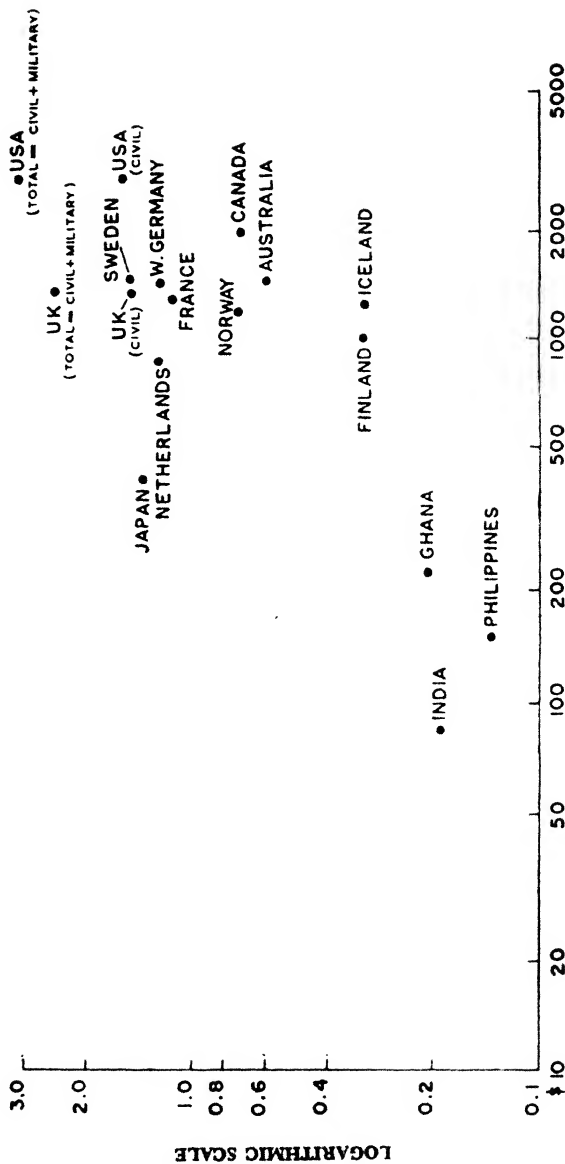


**RESEARCH ENROLMENT
INCLUDING ALL FACULTIES
1954-55 TO 1964-65**



RESEARCH & DEVELOPMENT EXPENDITURE IN RELATION TO PER CAPITA G N P AT MARKET PRICES 1961 (OR NEAREST YEAR)

GNERD
AS % OF
GNP



PER CAPITA G.N.P. IN US DOLLARS AT YEAR OF R. & D. ESTIMATE.
(LOGARITHMIC SCALE)

SOURCE: SCIENCE, ECONOMIC GROWTH & GOVERNMENT POLICY,
OECD, PARIS, 1963.

ACKNOWLEDGMENTS

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